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TAXONOMIC REVISION OF
AFRICAN CYPRIDINI. PART II.
DESCRIPTION OF *RAMOTHA* GEN. NOV.
(CRUSTACEA, OSTRACODA)

By

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Cape Town

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TAXONOMIC REVISION OF AFRICAN CYPRIDINI
PART II. DESCRIPTION OF *RAMOTHA* GEN. NOV.
(CRUSTACEA, OSTRACODA)

By

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(With 17 figures and 1 table)

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ABSTRACT

Ramotha gen. nov. is described to accommodate a number of African species, previously assigned to *Cypris*, *Eucypris* and *Strandesia*. It belongs to the Cypridini and in this tribe is characterized by a T1 with a divided penultimate segment, by a RV with an inwardly displaced frontal selvage and by a LV without a frontal selvage but with a large inner list. The type species of the new genus is *R. hirta* (Sars) from the Western Cape. *Ramotha curtisae* sp. nov. is described from bisexual populations, originating from Namibia and Zimbabwe. Ten other species are also transferred to this genus and are redescribed. *Eucypris bouilloni* Kiss is furthermore placed in the synonymy of *R. crassa* (Klie). The males of *R. hirta* (Sars), *R. producta* (Sars) and of *R. trichota* (G. W. Müller), thus far unknown, are here described. Representatives of this new genus are found mainly in temporary bodies of water in East and southern Africa and all species have restricted geographical distributions.

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INTRODUCTION

Sars (1895) described *Cypris corpulenta* and *Cypris trigona* from a swamp near Knysna (South Africa, Cape Province). Later, Sars (1924) transferred these and the species meanwhile described by Müller (1908, 1914) to the genus *Eucypris*, and added three more taxa to the list. Related taxa were reported from East African water bodies by Lowndes (1931), Klie (1939, 1944), Lindroth (1957) and Löffler (1968). Upon re-investigation of the types of *Strandesia crassa* Klie, it was shown that this species does not belong in the Cypricercinae, but rather has characters shared by the above taxa.

All these species are united by a number of features, which seem to place them between the genera *Cypris* and *Eucypris*, as interpreted in a classical sense, hence the confusion in the older literature. However, they do not belong in *Cypris* s.s., because they possess an inwardly displaced selvage in the RV only (in both valves in *Cypris*) and have the penultimate segment of the T1 divided (fused in *Cypris*). For the latter reason, Sars (1924) removed these taxa to *Eucypris*. It is here shown that they do not belong to this genus either, as they lack a 'c'-seta on the Mx2, which is typical of all Eucypridini (Martens 1989).

The genus *Ramotha* gen. nov. is here described to comprise all of the above species, as well as one new species, and is assigned to the Cypridini, because the hemipenis (in species where males are known), displays the '8'-shaped coils of the inner (post labyrinth) spermiductus, which is typical of this tribe. A re-assessment of the subfamily Cypridinae and its nominate tribe is presented in the first part of this revision (Martens 1990). Apart from *Ramotha* gen. nov., the Cypridini to date also comprise the genera *Cypris*, *Pseudocypris* and *Globocypris*.

The phyletic lineage analysed in the present paper constitutes a good example of the present chaos and confusion in African ostracod taxonomy and illustrates the difficulty of identifying African ostracods with the literature as it stands. The present genus has 12 nominal representatives (of which one is a synonym), originally described in no less than three different genera and subfamilies!

MATERIAL & METHODS

List of museums and collections

AM	Albany Museum, Grahamstown, RSA.
GW	Ernst-Moritz-Arndt-Universität, Greifswald, Germany.
KBIN	Koninklijk Belgisch Instituut voor Natuurwetenschappen, Brussels, Belgium.
MRAC	Koninklijk Museum voor Midden-Afrika, Tervuren, Belgium.
OSLO	Zoological Museum, Oslo, Norway.
UPPS	Uppsala Universitet, Zoologiska Muset, Uppsala, Sweden.
SAM	South African Museum, Cape Town, RSA.
SMN	State Museum of Namibia, Windhoek, Namibia.
ZIZM	Zoologisches Institut und Zoologisches Museum, Hamburg, Germany.

Abbreviations used in text and figures

A1 = antennula; A2 = antenna; bc = bursa copulatrix in hemipenis; Cp = carapace; db = dorsal branch of furcal attachment; di = distal end of unbranched furcal attachment; H = height of valves; il = inner list; im = inner margin; L = length of valves; lc = line of concrescence; ls = lateral shield of hemipenis; LV = left valve; Md = mandibula; ms = medial shield of hemipenis; Mx1 = maxillula; Mx2 = maxilla; pr = proximal end of furcal attachment; R = Rome organ; RV = right valve; sl = selvage; T1 = first thoracopod; T2 = second thoracopod; vb = ventral branch of furcal attachment; vm = valve margin; W = width of valves.

Chaetotaxy of the limbs follows the model proposed by Broodbakker & Danielopol (1982), and revised for the A2 by Martens (1987).

TAXONOMIC DESCRIPTIONS

Class OSTRACODA Latreille, 1806
Subclass PODOCOPA G. W. Müller, 1894
Order PODOCOPIDA Sars, 1866
Family **Cyprididae** Baird, 1845
Subfamily Cypridinae Baird, 1845
Tribe Cypridini Baird, 1845

Genus *Ramotha* gen. nov.

Derivation of name

The new genus is named after Ramoth, last remaining golden queen dragon at Benden Weyr on the planet Pern. This is, of course, a tribute to her creator, Miss Anne McCaffrey. Gender of the new genus is feminine.

Type species. Eucypris hirta Sars, 1924.

Diagnosis

A cypridinid genus, with mostly large (2–3 mm) and globular species. RV with frontal and caudal selvage inwardly displaced over a large distance, but with anterior valve margin ventrally not with lip-like extension. LV without inwardly displaced selvage, but with a large inner list, situated in the centre of a wide anterior calcified inner lamella and on the posterior inner margin; ventrally with a conspicuous outer list. T1 with penultimate segment divided and with seta d_1 2–3 times as long as seta d_2 .

Additional generic features

Caudal valve margin of the RV crenulated. A1 with Rome organ small. A2 with natatory setae extending well beyond tips of claws; in males with a sexual dimorphic chaetotaxy of apical claws and setae, showing a supplementary reduction of claw G_1 . Gamma seta on Md palp long, relatively slender and hirsute. Mx1 palp with terminal segment elongated. Mx2 without 'c'-seta. T2 with distal segments pincer-shaped. Furca and furcal attachment well developed.

Other species

Ramotha capensis (G. W. Müller, 1908), *R. corpulenta* (Sars, 1895), *R. crassa* (Klie) (syn.: *R. bouilloni* (Kiss) syn. nov.), *R. curtisae* sp. nov., *R. kenyensis* (Lindroth), *R. montana* (Lindroth), *R. producta* (Sars, 1924), *R. purcelli* (Sars, 1924), *R. trichota* (G. W. Müller, 1908), and *R. trigona* (Sars, 1924).

Taxonomic position

The genus belongs to the Cypridini, because of the presence of the '8'-shaped loops of the inner spermiductus in the hemipenis. It differs from *Cypris* s.s. and from *Pseudocypris* because it has the penultimate segment of the T1 divided; it furthermore lacks an inwardly displaced selvage on the LV, whereas the selvage on the RV has a different shape. *Pseudocypris* furthermore has a marginal selvage on both valves, and

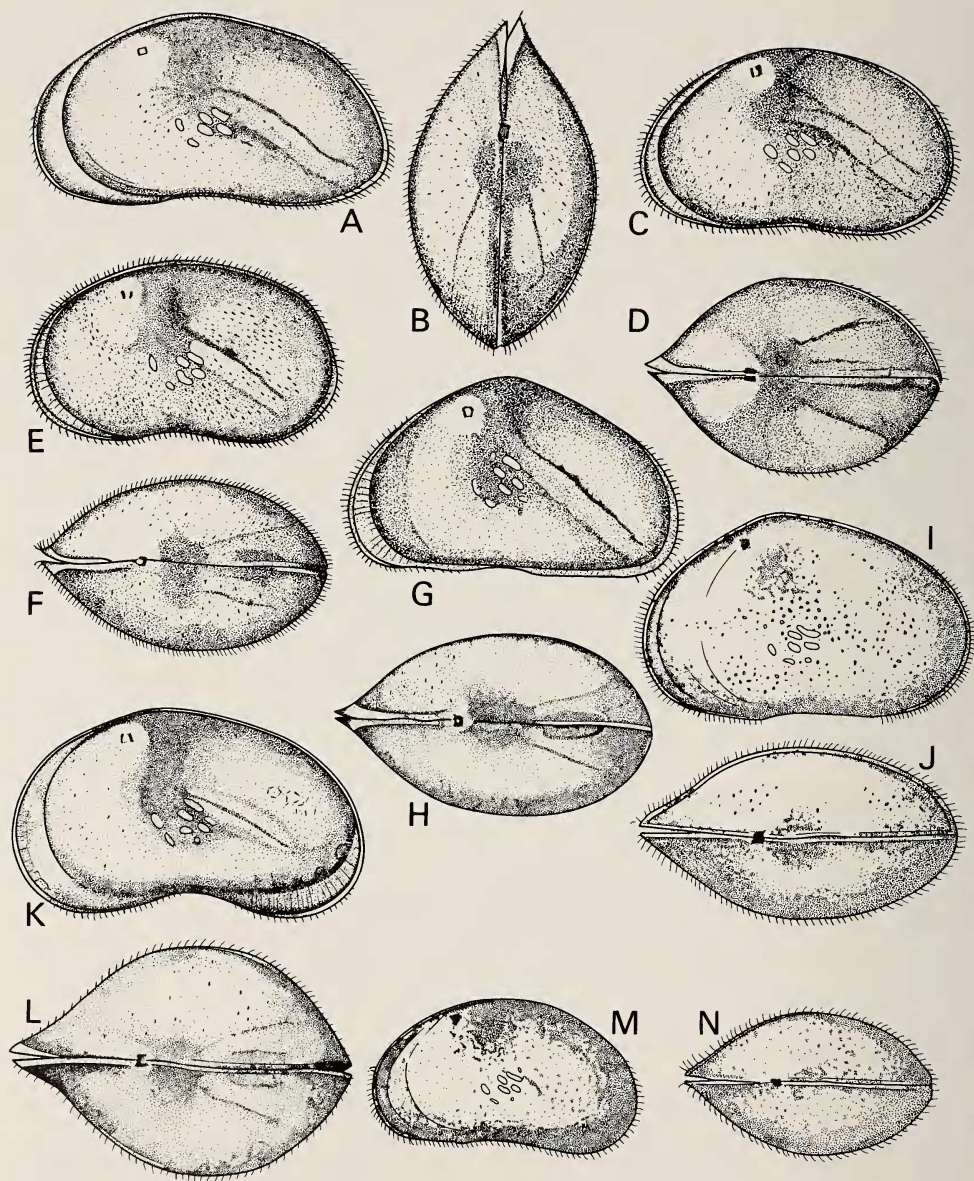


Fig. 1. Original illustrations of some South African species of *Ramotha* (all redrawn after Sars 1924—*Annals of the South African Museum*). A-B. *R. producta* (L = 2,40 mm). C-D. *R. corpulenta* (L = 2,10 mm). E-F. *R. hirta* (L = 1,90 mm). G-H. *R. trigona* (L = 1,75 mm). I-J. *R. trichota* (L = 3,30 mm). K-L. *R. capensis* (L = 1,80 mm). M-N. *R. purcelli* (L = 2,30 mm). A, C, E, G, I, K, M: Cps in left lateral view. B, D, F, H, J, L, N: Cps in dorsal view.

most species of this genus display large lateral ala on the valves. *Globocypris* also has a large frontal selva on the LV.

Ramotha hirta (Sars, 1924)

Figs 1E–F, 14H–L, 16H (parthenogenetic populations)

Figs 2–4, 5A–H (bisexual populations)

Cypris corpulenta G. W. Müller, 1908: 150–151, figs 1–6 (*non* Sars, 1895).

Eucypris hirta Sars, 1924: 110–111, pl. 3 (figs 5–6).

non Eucypris hirta Lowndes, 1931: 1292 (= *R. crassa* (Klie)).

non Eucypris hirta Klie, 1944: 17–18 (= *R. montana* (Lindroth)).

Ramotha elephantina Martens, 1990: 159 (*nomen nudum*).

Type locality

Pond on Green Point Common, near Cape Town (South Africa).

Type material

SAM–A11116: c. 20 good ♀ from the above locality (tube labelled ‘Cape of Good Hope’); these specimens are here considered the syntypes of this species. Lectotype (here designated): a ♀, selected from the above syntypes, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (SAM–A40043); all other syntypes become paralectotypes.

Other material investigated

Parthenogenetic populations. SAM–A11115, 1 dissected ♀ from Cape of Good Hope. SAM–A11119, 1 ♀ from Cape of Good Hope. SAM–A11283, 2 ♀, labelled ‘SAM EE’. SAM–A11284, 2 ♀ from Cape Flats. SAM–A11285, 1 ♀, no locality given. (All identified by G. O. Sars.)

Bisexual populations. 18 ♀ and 2 ♂ raised from dried mud, collected from small pools in granite on Olifantsberg near Leopoldville (approx. 32°12’S 18°25’E), Western Cape Province, Republic of South Africa. Mud collected by Dr J. A. Day (original collections ‘02’, ‘C4’ and ‘SWT2’) between June 1980 and July 1981. Deposition: 1 dissected ♂ (SAM–A40038), 1 dissected ♀ (SAM–A40039), 1 ♂ and 1 ♀ (both dissected) (KBIN OC1489–1490), 1 ♂ and 2 ♀ stored dry (after use for SEM illustration—MRAC.56779–56780), the remaining specimens *in toto* in spirit (KBIN OC1491).

Diagnosis (parthenogenetic populations)

An easily recognizable species with valves densely set with long hairs. Cp in dorsal view (Fig. 14L) with anterior edge beak-like and asymmetrically pointed to the right side. Valves in lateral view (Fig. 14H–J) relatively high and short. Mx2 palp in some specimens with an additional lateral seta (Fig. 16H). Furcal attachment distally branched.

Measurements (in µm, mean ± S.D., n = 5)

L = 1 472 ± 40; H = 931 ± 24; W = 896 ± 27; W/L = 0.59–0.63.

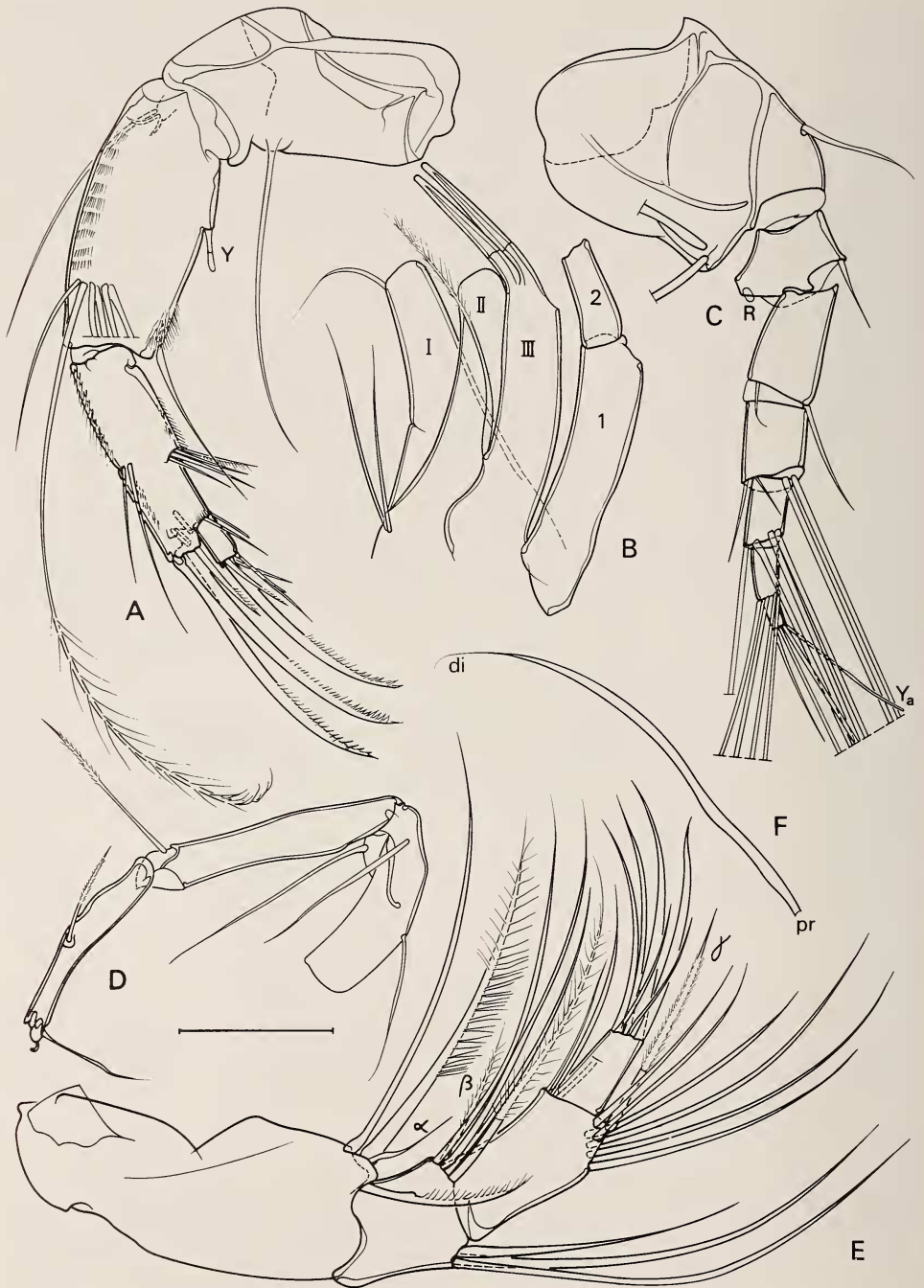


Fig. 2. *Ramothena hirta* (Sars), ♂, (SAM-A40038). A. A2. B. Mx1, showing part of chaetotaxy. C. A1. D. T2. E. Md palp. F. furcal attachment. Scale: 156 μ m for A, C, D, F; 81 μ m for B, E.

Diagnosis (bisexual populations)

Medium-sized species, with ventral margin (including inner list and selvage) conspicuously produced in the first third (especially in the ♀). Cp in dorsal view with greatest width (c. one-half of the length) situated in the first third of the length, anterior tip concavely and asymmetrically produced and posterior margin bluntly pointed. Furcal attachment in both sexes without dorsal branch. Prehensile palps asymmetrical, the right one being the largest. Hemipenis with lateral shield protruding towards the ventral side.

Measurements (in μm , mean \pm S.D.)

♂: L = 1 724; H = 1 034; W = 1 000 (n = 1).

♀: L = 1 755 \pm 104; H = 1 083 \pm 66; W = 1 069 \pm 35; W/L = 0,61–0,66 (n = 5).

Additional description of ♂

RV (Fig. 5B) with anterior margin more broadly rounded than posterior one; dorsal margin weakly curving and sloping towards the caudal side, merging with that margin without an obvious angle; towards the frontal side weakly indented at about one-third from the front; ventral margin nearly straight, apart from the conspicuous curve of the selvage and valve margin in the anterior third. Calcified part of the inner lamella relatively narrow, on both anterior and posterior sides with traces of a blunt inner list; valve margin on both posterior and anterior sides set with a series of short ridges (Fig. 5G). Central muscle scars with mandibular scars large and with scar pattern of adductor muscles conforming to that of the subfamily.

LV (Fig. 5A) with anterior margin more broadly rounded than posterior one; dorsal margin weakly curving and passing into the caudal margin with a blunt angle, no anterior indentation; ventral margin somewhat more sinuous than in the RV and with matching curves of valve margin and inner list. Caudal calcified inner lamella somewhat wider than in the RV and with a large inner list positioned near the inner margin. No ridges on the valve margin.

Cp in ventral view with RV reaching beyond LV anteriorly and with LV overlapping RV on the ventral side. Greatest width situated in the anterior third of the Cp. Surface densely pitted and set with short setae.

A1 (Fig. 2C) seven-segmented and typical of the subfamily. Terminal segment c. 1,5 times as long as its greatest width, all natatory setae long.

A2 (Fig. 2A) with natatory setae reaching well beyond tip of terminal claws; aesthetasc Y short. Apical chaetotaxy (Fig. 3A) with typical sexual dimorphic characters (see Martens 1987), but with claw G₁ short; seta of y₃ longer than the aesthetasc.

Md with coxa elongated (Fig. 3H). Md palp (Fig. 2E) four-segmented. First segment with large respiratory plate (exopodite—not shown in the figure) and a group of four apical setae: one long and smooth, one short, narrow and smooth (alpha-seta), the latter flanked by one large 's'-seta, set with a double row of setulae, and by one short 's'-seta. Second segment with two groups of apical setae—an internal group consisting of a short and hirsute beta-seta, three long and smooth and one long and barbulated setae; external group consisting of two long and one shorter setae. Penultimate segment with six subapical external setae (three long and three shorter) and one narrow and hirsute gamma-seta of intermediate length, as well as three subequal

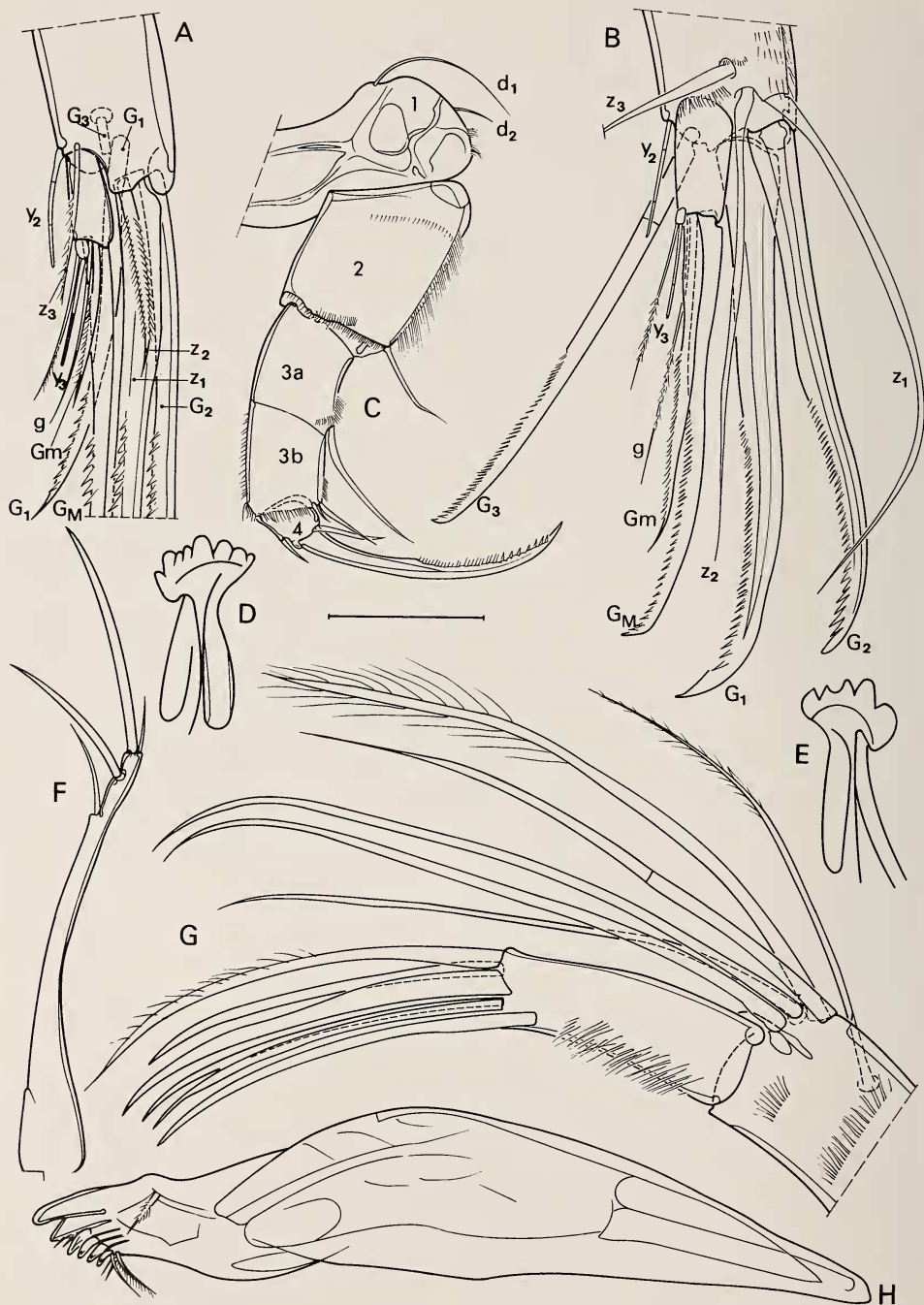


Fig. 3. *Ramotha hirta* (Sars). A. ♂, A2, detail of distal chaetotaxy (SAM-A40038). B. ♀, A2, detail of distal chaetotaxy (SAM-A40039). C. ♂, T1 (SAM-A40038). D-E. ♂, rake-like organ (SAM-A40038). F. ♂, furca (SAM-A40038). G. ♂, Mx1 palp, detail of chaetotaxy (SAM-A40038). H. ♂, Md-coxa (SAM-A40038). Scale: 156 μm for B, F, G; 81 μm for A, C-E; 33 μm for H.

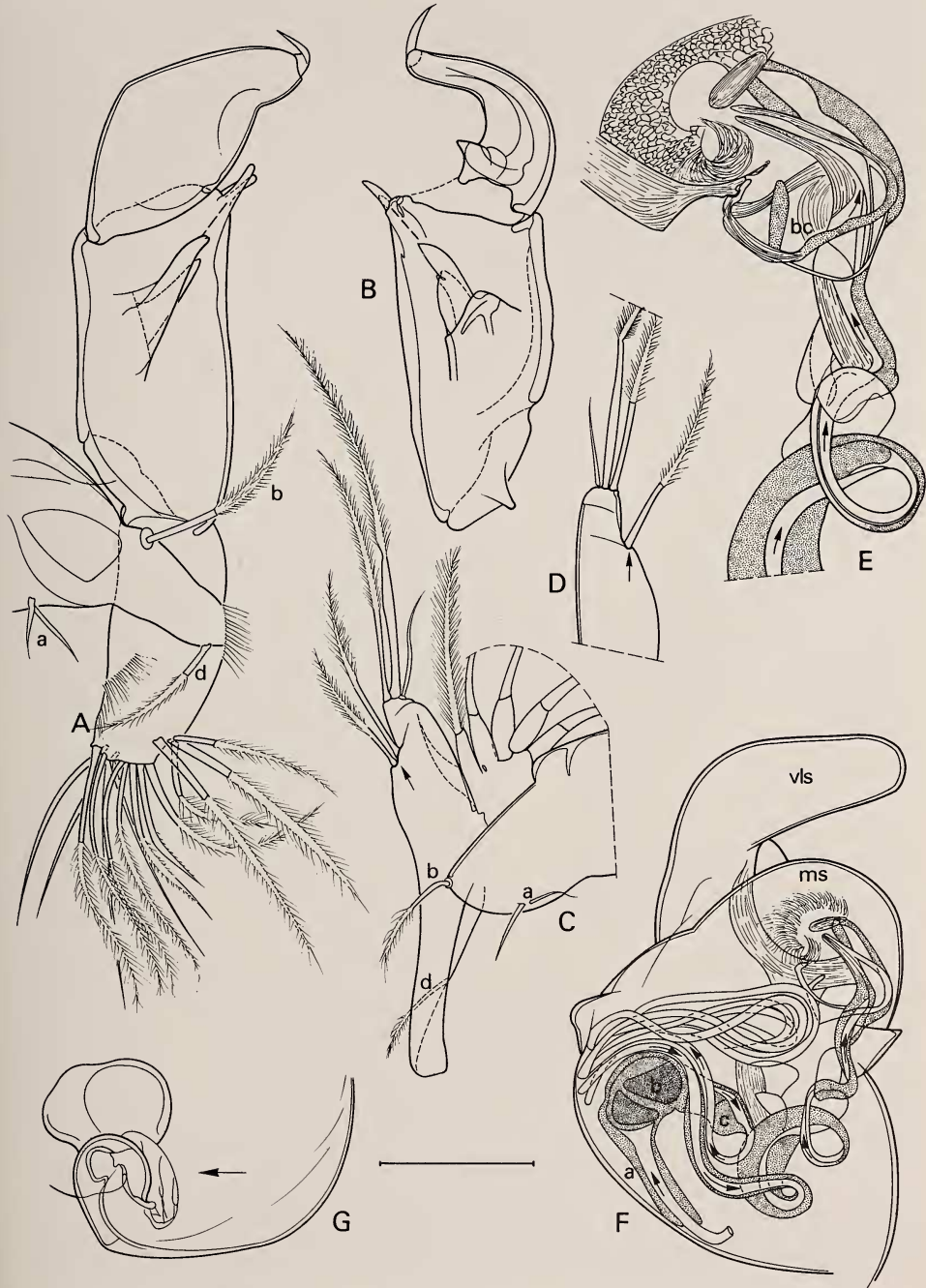
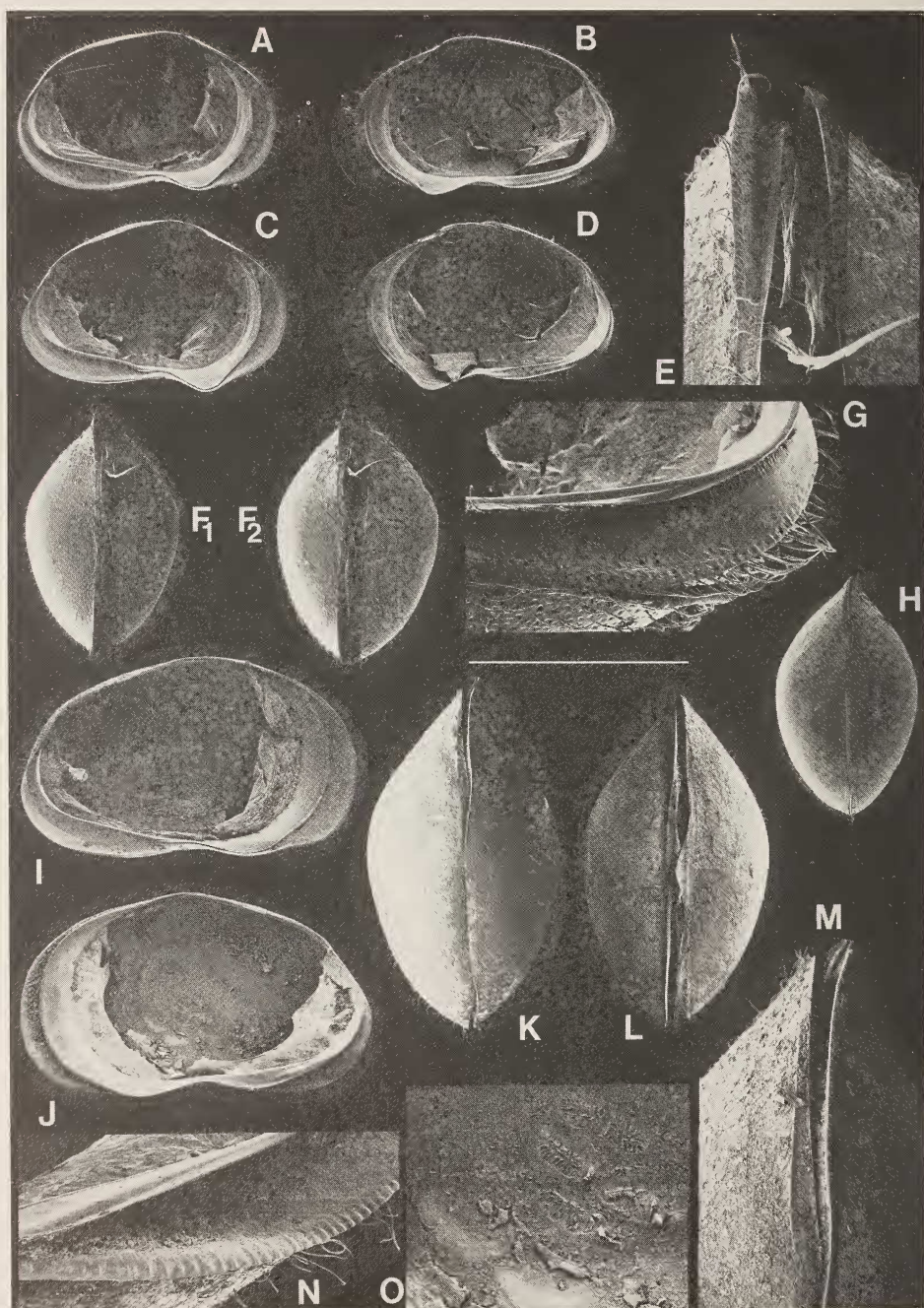


Fig. 4. *Ramotha hirta* (Sars). A. ♂, right Mx2 (respiratory plate not shown) (SAM-A40038). B. ♂, left prehensile palp (SAM-A40038). C. ♀, Mx2 (only part of chaetotaxy shown) (KBIN OC1490). D. ♀, palp of other Mx2 of same specimen as in C (KBIN OC1490). E. ♂, hemipenis, detail of part of inner anatomy (KBIN OC1489). F. ♂, hemipenis (KBIN OC1489). G. ♀, genital lobe (SAM-A40039). Scale: 156 μm for C, D, F, G; 81 μm for A, B, E; 33 μm for details in A and B.



apical setae on the internal side. Terminal segment with four claw-like and with two or three short and slender setae, all apically inserted.

Mx1 with three endites, a two-segmented palp (Fig. 2B) and a large respiratory plate. Third endite with two smooth apical claws and with a long and stout lateral seta, apart from the normal apical setae. First segment of palp (Fig. 3G) with six sub-apical and subequal setae; terminal segment elongated, 2.5–3 times as long as its basal width, carrying six apical claw-like setae.

Mx2 with asymmetrical palps, a large endopodite with typical chaetotaxy conforming to the subfamily and a respiratory plate (exopodite) with six plumous rays (five long and one short—not shown in the figures). Endopodite (Fig. 4A) elongated, carrying two short 'a'-setae, one larger, central 'b'-seta and one lateral 'd'-seta, 'c'-seta absent. Apical chaetotaxy consisting of c. 15 setae of different size and shape.

Right prehensile palp (Fig. 4A) with elongated basal segment, carrying two apical sensory outgrowths; terminal segment three-dimensionally curved; when flattened on a slide broad, with a narrow apex and with distal margin showing a wide, blunt angle, apically with one broad sensory organ.

Left prehensile palp (Fig. 4B) with basal segment similar to that of the right palp; terminal segment narrower, with a proximal blunt tooth, this segment gradually narrowing towards the tip, the latter bearing a single sensory organ.

T1 (Fig. 3C) with seta d_1 more than three times as long as d_2 ; all segments short, wide and hairy; penultimate segment divided; apical claw stout and only in its distal half set with a double row of spines. Second segment with one apical seta. Segment 3A with one subapical seta; segment 3B with one large and one minute apical setae. Fourth segment with one lateral seta and, apart from the apical claw, with one other apical claw-like seta.

T2 (Fig. 2D) a cleaning limb with an apical pincer and without further special features.

Furca (Fig. 3F) with ramus narrow and curved, carrying two claws and two setae and with ventral margin serrated with minute setulae. Furcal ramus (Fig. 2F) in this species consisting of a single ramus, not distally split into a dorsal and a ventral branch.

Rake-like organs (Fig. 3D–E) T-shaped, but with apical part swollen, carrying few blunt teeth.

Hemipenis (Fig. 4F) with a broadly rounded medial shield, asymmetrically expanded towards the ventral side and a pointed, protruding lateral shield, the latter boot-like and with the tip pointing in ventral direction. Internal anatomy with the normal labyrinth, consisting of the elongated parts 'a' and 'c' and the rounded hinge-

Fig. 5 (see opposite). A–H. *Ramotha hirta* (Sars). A. ♂, LV, internal view (KBIN OC1489). B. ♂, RV internal view (KBIN OC1489). C. ♀, LV, internal view (KBIN OC1490). D. ♀, RV, internal view (KBIN OC1490). E. ♀, Cp, ventral view, detail of anterior edge (MRAC.56779). F. ♀, Cp, ventral view (stereo-pair, MRAC.56779). G. ♂, tilted RV, internal view, detail of posterior margin (KBIN OC1489). H. ♀, Cp, dorsal view (MRAC.56779). I–O. *Ramotha purcelli* (Sars), paralectotypes. I. ♀, LV, internal view (SAM–A40046). J. ♀, RV, internal view (SAM–A40046). K. ♀, Cp, dorsal view (SAM–A40048). L. ♀, Cp, ventral view (SAM–A40048). M. ♀, Cp, dorsal view, detail of anterior edge (SAM–A40048). N. ♀, tilted RV, internal view, detail of posterior edge (SAM–A40046). O. ♀, RV, internal view, detail of central muscle scars (SAM–A40046).

Scale: 1 563 μm for A–D, F, H; 1 320 μm for I–L.

joint 'b', followed by the 3–5 '8'-shaped coils of the inner spermiductus, situated distally from the labyrinth, the sclerotized semi-circular loop and the various hollow trabeculae leading to the bursa copulatrix (Fig. 4E).

Four pairs of testical tubes present.

Additional description of ♀

All valve features (Fig. 5C–D) basically as in the male, but valves generally slightly larger; ventral outgrowth even more pronounced than in the male and caudal inner list in the LV situated more towards the interior.

Cp in dorsal and ventral view (Fig. 5E–H) with greatest width situated in the anterior third; RV frontally reaching beyond LV.

A2 (Fig. 3B) basically as in the male, apart from the normal sexual dimorphism in the apical chaetotaxy.

Mx2 (Fig. 4C–D) with palp undivided, carrying the normal unequal three apical setae, but also 1–2 supplementary lateral setae.

T1 somewhat plumper and heavier than in the male.

Genital lobe (Fig. 4G) undivided and without specific characteristics.

Ovaria on both sides curved upwards.

Discussion

The shape and the hairy aspect of the valves allow an easy identification of this species within the genus. Nevertheless, confusion exists in the older literature. G. W. Müller (1908) erroneously reported specimens of this species as *Cypris corpulenta* (see p. 105). Lowndes (1931) and Klie (1944) both reported this taxon from East African inland waters. The material of the latter author was available for re-examination (ZIZM, Hamburg) and, although heavily decalcified, could still be identified as belonging to *R. montana* (Lindroth) (see p. 113).

Lowndes (1931) mentioned that he had only a few specimens in bad condition and therefore no attempt was made to obtain his material. Relying on the locality from which his material originated (Elgon), it is very likely that he was actually dealing with *R. crassa*, reported from this area by Klie (1939) and Kiss (1959), and his specimens are here tentatively referred to the latter species.

Remarks

It is noteworthy that the masticatory processes of both mandibular coxae are always situated in the space created by the ventral bulges in both valves. Undoubtedly, these ventral bulges are adaptations to the species' feeding strategy and behaviour, which unfortunately remain unknown to date.

Ramotha capensis (G. W. Müller, 1908)

Figs 1K–L, 6E–J, 7A–F

Cypris capensis G. W. Müller, 1908: 153–154, figs 1–6; 1914: 70.

Eucypris capensis Sars, 1924: 112, pl. 3 (figs 9–10).

Type locality

Zeekoevlei, Plumstead, near Simonstown (South Africa).

Type material

GW II 24627(4): c. 80 ♀ in spirit in a tube, labelled '*Cypris capensis*, Gaus Expedition (paratypus)'. Lectotype (here designated): a ♀, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (no. GW.24627b, c), selected from the above syntypes; all other syntypes become paralectotypes.

Other material investigated

GW II 25131(70): c. 50 ♀ in spirit in a tube, labelled 'Süd-Afrika, Deutsche Südpolar Exp.' (det. G. W. Müller). SAM-A11288: 16 ♀ in spirit in a tube, labelled 'SAM EE' (det. G. O. Sars) (used for descriptions: SAM-A40051-40052). SAM-A11927: various ♀ in spirit in a tube labelled 'Valkenberg vlei, coll. 15 July 1922 by Stephensen' (det. D. H. Eccles—these specimens smaller). KBIN OC1492 (G501/18): 1 ♀ in spirit from Wiedrif, Western Cape Province (approx. 34°40'12"S 19°54'47"E) (coll. Dr J. King, 11 May 1989) (det. K. Martens).

Diagnosis

In lateral view (Fig. 7A–B), rather elongated and with a sinuous ventral margin. In dorsal view (Fig. 7E–F) with greatest width (c. two-thirds of length) situated in the middle, with both anterior and posterior edges with strong beak-like extension. Ventral outer list on LV strong (Fig. 7C–D); anterior, ventral and posterior valve margins of RV set with internal ridges. Valve surface densely pitted; 'poren-warzen' present.

Mx2 palp in some specimens with an additional lateral seta (Fig. 6I); furcal attachment distally branched (Fig. 6F).

Measurements (in µm, mean ± S.D., n = 5)

L = 1 791 ± 25; H = 1 014 ± 19; W = 1 179 ± 26; W/L = 0,65–0,68.

Discussion

This species is easily recognizable and can be distinguished from its congeners by the shape of the valves in lateral view, but especially by the morphology of the carapace in dorsal and ventral views. *Ramotha capensis* appears to be restricted to the Western Cape Province.

Ramotha corpulenta (Sars, 1895)

Figs 1C–D, 6A–D, 7G–J

Cypris corpulenta Sars, 1895: 30–32, pl. 5 (figs 2a–c).

Eucypris corpulenta Sars, 1924: 110, pl. 3 (figs 3–4).

Type locality

Swamp near Knysna, east of Cape of Good Hope (South Africa).

Type material

SAM-A11114: c. 20 ♀ raised from dried mud, collected from the type locality. Lectotype (here designated): a ♀, selected from the above syntypes, with soft parts

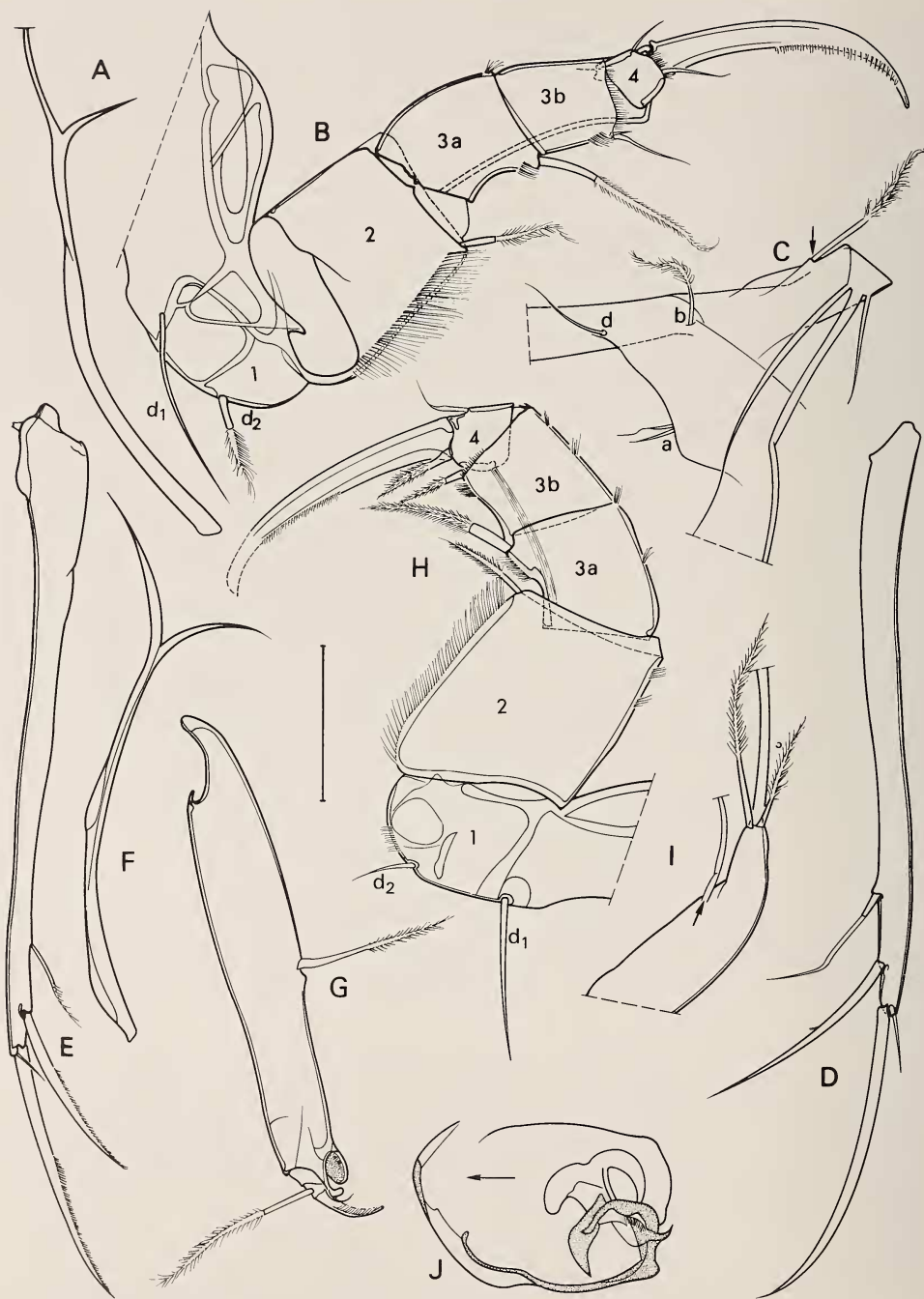


Fig. 6. A–D. *Ramotha corpulenta* (Sars), ♀, (SAM–A40049). A. Furcal attachment. B. T1. C. Mx2. D. Furca. E–J. *Ramotha capensis* (G. W. Müller), ♀, (SAM–A40051). E. Furca. F. Furcal attachment. G. Distal segment of T2. H. T1. I. Mx2 palp. J. Genital lobe. Scale: 156 μm for A–F, H–J; 81 μm for G.

dissected in glycerine on a sealed slide and with valves stored dry (SAM-A40049); all other syntypes become paralectotypes.

Diagnosis

Large and semi-globular species, with dorsum highly arched in lateral view (Fig. 7G–H) and with ventral margin only weakly sinuous. RV caudally produced, with few ridges on the caudal valve margin only. Cp in ventral view (Fig. 7J) with anterior end beak-like, but less so than in *R. capensis*; posterior edge convex; greatest width about two-thirds of length and situated at about one-third from the front. Valve surface pitted, but less so and with shallower pits than in *R. capensis*; 'poren-warzen' present. Ventral outer list on LV strongly produced. Mx2 palp in some specimens with an additional lateral seta (Fig. 6C); furcal attachment distally branched (Fig. 6A).

Measurements (in μm , mean \pm S.D., $n = 5$)

$L = 1\,924 \pm 109$; $H = 1\,141 \pm 55$; $W = 1\,162 \pm 86$; $W/L = 0.58\text{--}0.62$.

Discussion

Sars' (1924) illustrations of this species were somewhat inaccurate, as he failed to show the caudally produced RV and illustrated the carapace too globular and wide.

G. W. Müller (1908) identified some specimens from Zeekoevlei as *Cypris corpulenta* and provided illustrations. Relying on the shape and the size of the carapace (1.9–2.0 mm), we can unequivocally refer these specimens to *Ramotha hirta* (re-described above). This species was at that stage still unknown, which makes Müller's error understandable. *Ramotha hirta* is furthermore a typical Western Cape species, whereas *R. corpulenta* is only known from the vicinity of Knysna (Southern Cape region).

Ramotha crassa (Klie, 1939)

Fig. 8A–G

?*Eucypris hirta* Lowndes, 1931: 1292 (*non* Sars, 1924).

Strandesia crassa Klie, 1939: 132–134, figs 44–47.

Eucypris bouilloni Kiss, 1959: 5–7, fig. 2 (1–10) *syn. nov.*

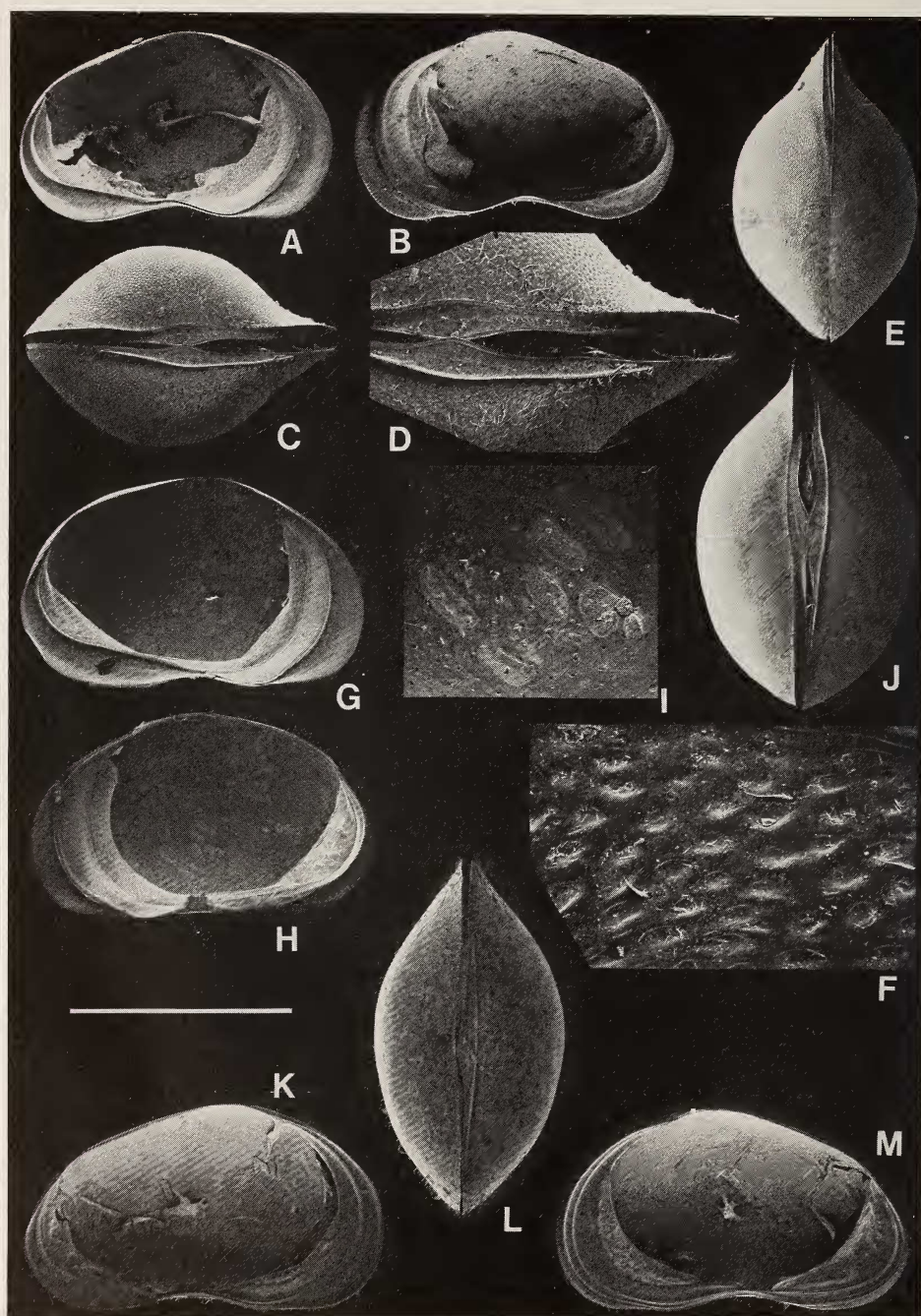
Type locality

Small lake near camp 4 of Elgon; small lake of Cladera near Elgon (Kenya).

Type material

Ramotha crassa: ZIZM 871: c. 20 ♀ in glycerine in a tube, labelled '*Strandesia crassa* n. sp., Omo Exp. Calderasee des Elgon 7 Januar 1933 coll. Chappuis'. These specimens are generally recognizable, but all carapaces are completely decalcified (hence no SEM micrographs could be provided) and crushed. Lectotype (here designated): a ♀, selected from the above syntypes, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (ZIZM/CR.871a/1); all other syntypes become paralectotypes.

Ramotha bouilloni: MRAC 47352–47359: 5 decalcified ♀ in a tube, labelled 'Mt. Elgon, 2e lac, alt. 3 780 m, coll. Dr J. Bouillon—14.12.1953', belonging to at least



two different genera. As *R. bouilloni* is here synonymized with *R. crassa*, no lectotype is here designated for this nominal species.

Diagnosis

Valves short and high, greatest height situated at about one-third from the front, dorsal margin straight, sloping towards the caudal side and passing into the caudal margin with a blunt angle on the LV (Fig. 8A–B). In dorsal view (Fig. 8C), frontal edge pointed, with LV reaching beyond RV, greatest width (c. four-sevenths of length) situated just in front of the middle. The 'a'-setae on Mx2 sometimes fused at their base (Fig. 8F–G).

Measurements

Klie (1939: 134) gave the following measurements: L = 1,6 mm; H = 0,96 mm; W = 0,92 mm. New measurements (in μm , mean \pm S.D., n = 5): L = $1\,528 \pm 36$; H = 917 ± 19 .

Discussion

This species is closely related to *R. montana*, but is much smaller and has relatively higher valves. It was originally described from Mount Elgon (Klie 1939). From the same region, Kiss (1959) described two other species: *Eucypris montelgoni* and *E. bouilloni*. The type material of both nominal taxa is curated by the MRAC (Tervuren); in both cases, it consists of very few, damaged and decalcified specimens.

The tube labelled '*E. bouilloni*' contained 5 ♀, three of which belong to a species of *Eucypris* s.s. (no selvage in RV, no inner list in LV, 'c'-seta on Mx2), possibly *E. virens*; the remaining two specimens belong to *R. bouilloni*. Upon comparison with the type material of *R. crassa*, it was decided that the species were synonymous. Their similarity was evident from the figures of both nominal taxa. We here formally synonymize *R. bouilloni* with *R. crassa*.

A more difficult case is the position of *Eucypris montelgoni*. The tube thus labelled (MRAC 47350) contained one crushed ♀, similar in appearance to *R. crassa* and of approximately the same size, but definitely not referable to what was described as *E. montelgoni*. Kiss (1959: 7–8) indeed cited the length of *E. bouilloni* as 1,7 mm, but only 0,7 mm for *E. montelgoni*. We cannot consider the latter to be the larvae of *R. bouilloni* (hence *R. crassa*), because the A2 was illustrated with 5+1 natatory setae (A-1 larvae—the 8th instar—of Cyprididae have only five natatory setae, A-2 larvae have four setae, etc.—see below). We are therefore, at present, unable to place *E. montelgoni* conveniently and this will remain impossible until new material of this species becomes available.

Fig. 7 (see opposite). A–F. *Ramotha capensis* (G. W. Müller), ♀. A. LV, internal view (GW.24627b, c). B. RV, internal view (GW.24627b, c). C. Cp, ventral view (GW.24627d). D. Cp, ventral view, detail anterior (GW.24627d). E. Cp, dorsal view (GW.24627d). F. Cp, dorsal view, detail of surface structure (GW.24627d). G–J. *Ramotha corpulenta* (Sars), ♀. G. LV, internal view (SAM–A40050). H. RV, internal view (SAM–A40050). I. RV, internal view, detail of central muscle scars (SAM–A40050). J. Cp, ventral view (KM.1167—lost). K–M. *Ramotha producta* (Sars), ♀ (8th larval instar). K. LV, internal view (KBIN OC1499). L. Cp, ventral view (KBIN OC1500). M. RV, internal view (KBIN OC1499). Scale: 1 316 μm for A–C, E, G, H, J; 980 μm for K–M; 714 μm for D; 373 μm for I; 82 μm for F.

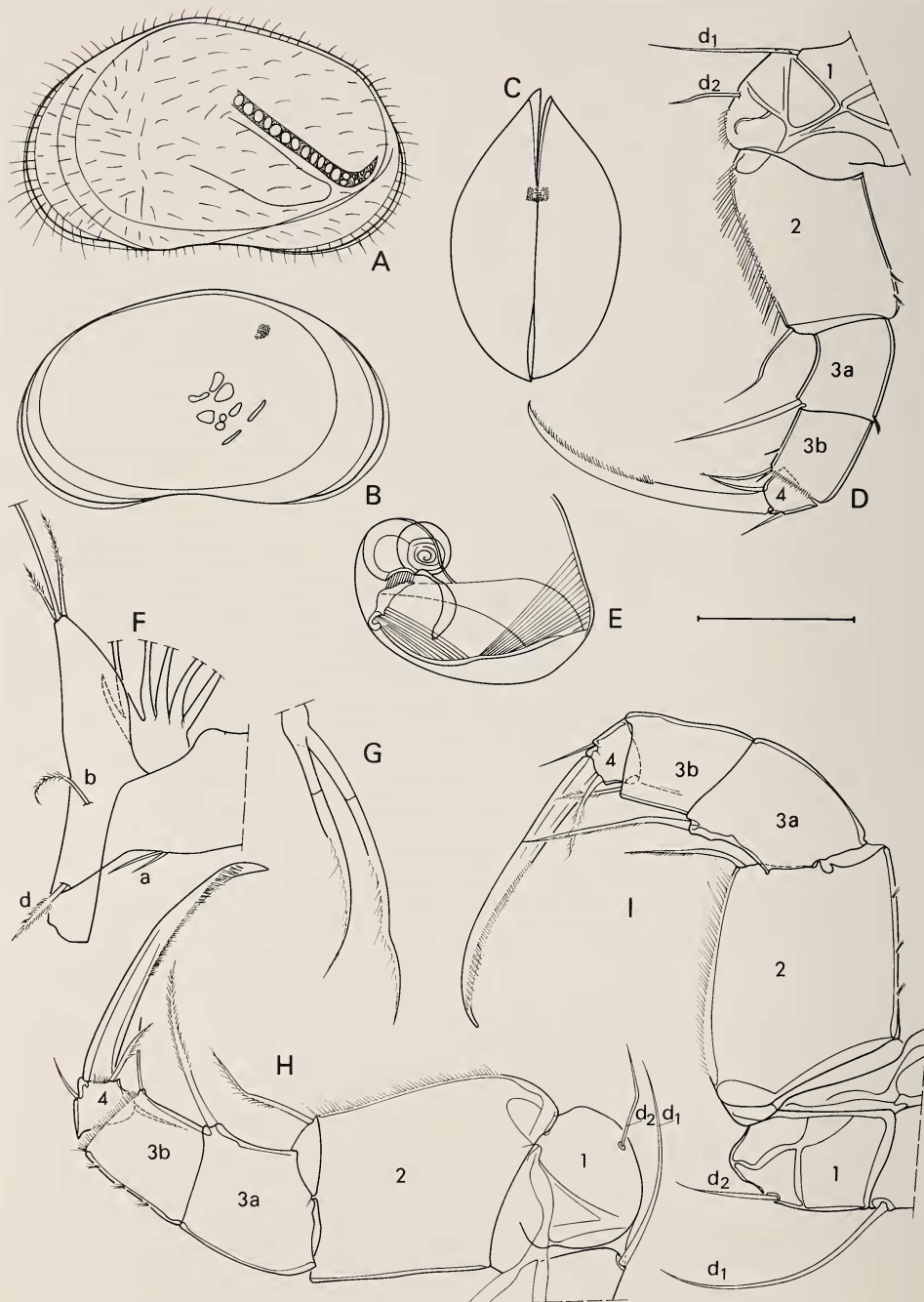


Fig. 8. A–G. *Ramotha crassa* (Klie), ♀ (A–C redrawn after Klie (1939), D–G original from lectotype specimen no: ZIZM/CR.871a/1). A. LV, external view. B. RV, external view. C. Cp, dorsal view. D. T1. E. Genital lobe. F. Mx2, showing part of chaetotaxy. G. Mx2, detail of fused 'a'-setae. H. *Ramotha montana* (Lindroth), ♀ (UPPS.228(g.1–2)), T1. I. *Ramotha kenyensis* (Lindroth), ♀ (UPPS.601(n.1–2)), T1. Scale: c. 840 μ m for C; c. 670 μ m for A, B; 156 μ m for D–F, H, I; 33 μ m for G.

Ramotha curtisae sp. nov.

Figs 9, 10A–M, 11A–H

Derivation of name

This species is named after Miss Barbara Curtis (Windhoek), curator of fresh-water invertebrates at the State Museum, Windhoek, Namibia, who has generously supplied me with Namibian ostracods over the past years.

Type locality

A small farm dam at Joyec (plot 198), Gobabis district, Namibia (approx. 21°52'32"S 18°18'2"E).

Type material

SMN 51250: c. 20 good ♂ and ♀, collected from the above locality by B. A. Curtis on 24 June 1986. Holotype: ♂, stored *in toto* in spirit (SMN 51513).

Allotype: ♀, with soft parts dissected and with valves stored dry (SMN 51514). Paratypes: 2 ♂ dissected and stored as the allotype (KBIN OC1493 and SMN 51515), 2 ♀ stored dry *in toto* (after use for SEM—SMN 51516); the bulk of the paratypes remains in spirit, stored under the same number as the original sample. Deposition: one dissected ♂ is lodged in the collection of the KBIN (Brussels), the other paratypes, as well as the holotype and the allotype, are returned to the SMN (Windhoek, Namibia).

Other material investigated

SMN 50921: 1 LV + soft parts of a ♀, collected on 26 February 1986 by B. A. Curtis from a farm dam at Biesiepan (plot 971) at the border of the Grootfontein and the Otjiwarongo districts (approx. co-ordinates: 20°S 17°E). Accompanying ostracod fauna: *Heterocypris ovularis*.

10 000s of good ♂ and ♀ in 3 samples from Shopi Pan in Hwange Nature Park, Zimbabwe (approx. 18°S 24°E), collected on 4 September 1948 (AM/SED.91), 5 September 1948 (AM/SED.98) and 11 September 1948 (AM/SED.36) by Mr and Mrs Omer-Cooper. Accompanying ostracod fauna in these samples: *Pseudocypris circularis*, *Cypricercus* sp. nov., *Parastenocypris junodi* and *Afrocypris barnardi*.

Diagnosis

Valves (Fig. 10A–F) highly arched and sub-triangular, in lateral view with anterior margin more broadly rounded than posterior one, the latter rather pointed. Cp in dorsal view with both anterior and posterior edge convexly rounded and with greatest width situated in the middle. LV with anterior inner list crenulated.

Hemipenis with lateral shield boot-like (Fig. 9E–F), but with tip less elongated than in *R. hirta*; medial shield far more pronounced than in the latter species. Prehensile palps asymmetrical; right palp (Fig. 9C) with penultimate segment with a dorsal angle of c. 90° (this angle greater in the type species).

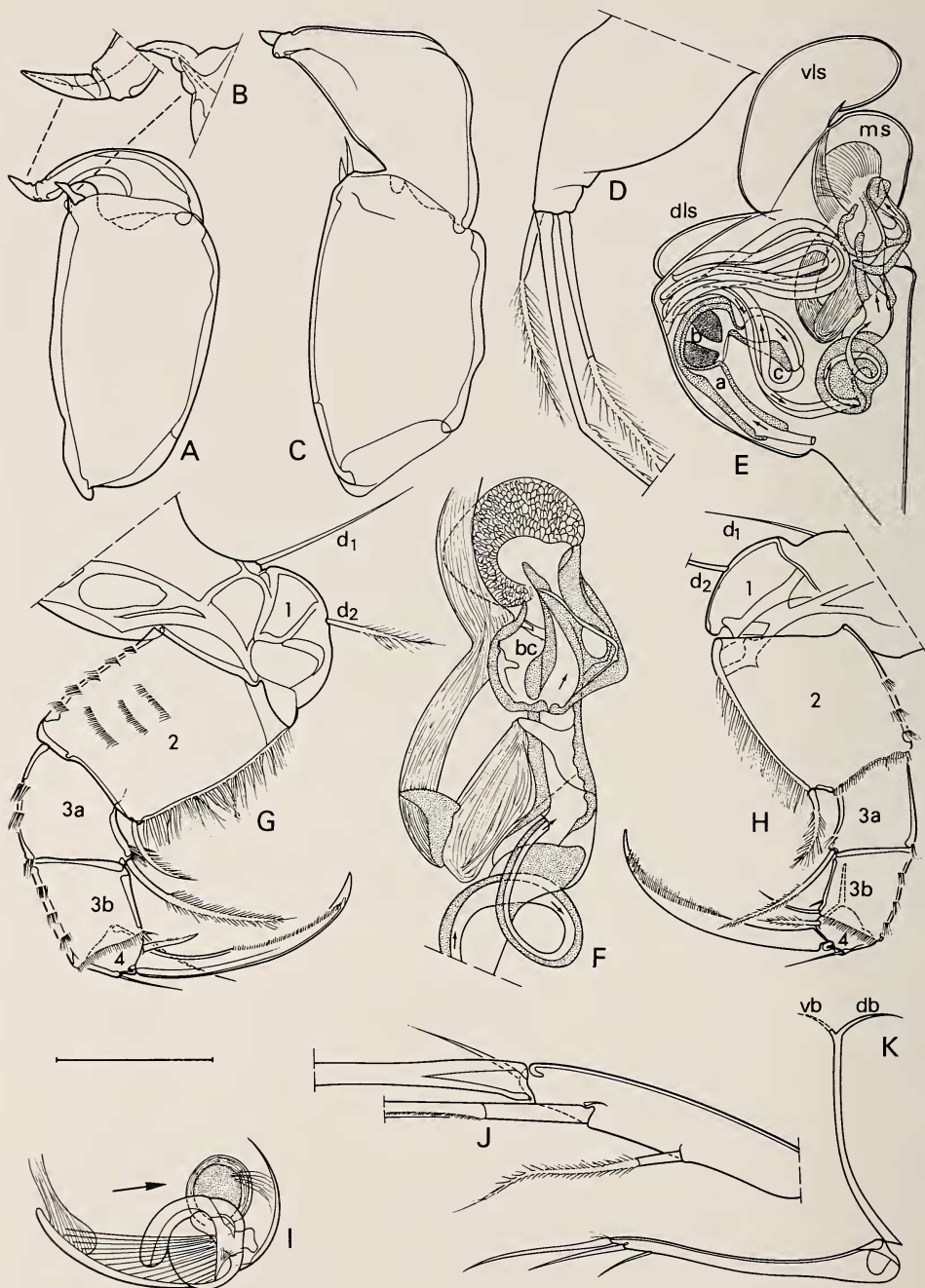


Fig. 9. *Ramotha curtisae* gen. et sp. nov. A. ♂, left prehensile palp (KBIN OC1493). B. ♂, left prehensile palp, detail of sensory organs on both segments (KBIN OC1493). C. ♂, right prehensile palp (KBIN OC1493). D. ♀, Mx2 palp (SMN 51514). E. ♂, hemipenis (KBIN OC1493). F. ♂, hemipenis, detail of part of inner anatomy (KBIN OC1493). G. ♀, T1 (SMN 51514). H. ♂, T1 (KBIN OC1493). I. ♀, genital lobe (SMN 51514). J. ♀, furca, detail of apical part (SMN 51514). K. ♀, furca and furcal attachment (SMN 51514). Scale: 323 μm for A, C, D, F, I, J; 156 μm for E, G, H; 81 μm for K; 33 μm for B.

Remarks

Specimens from the Hwange Nature Park (Figs 10G–M, 11A–H) are somewhat smaller than those from Namibia and have a significantly larger H/L ratio (see measurements below). The right prehensile palp has a terminal segment that is somewhat narrower and more elongated than in the Namibian specimens, whereas the left palp has a more elongated penultimate segment. These differences, however, seem to fall in the range of a reasonable variability and no taxonomic value is as yet attached to them.

Measurements (in μm , mean \pm S.D., $n = 5$)

Namibia (SMN 51250). ♂: $L = 1\,576 \pm 38$; $H = 1\,007 \pm 15$; $W = 910 \pm 33$; $W/L = 0,55\text{--}0,63$; $H/L = 0,63\text{--}0,64$. ♀: $L = 1\,645 \pm 63$; $H = 1\,045 \pm 38$; $W = 957 \pm 43$; $W/L = 0,56\text{--}0,60$; $H/L = 0,63\text{--}0,65$.

Zimbabwe (AM/SED.36). ♂: $L = 1\,452 \pm 39$; $H = 993 \pm 33$; $W = 907 \pm 20$; $W/L = 0,62\text{--}0,64$; $H/L = 0,67\text{--}0,70$. ♀: $L = 1\,489 \pm 26$; $H = 1\,034 \pm 21$; $W = 955 \pm 9$; $W/L = 0,64\text{--}0,65$; $H/L = 0,68\text{--}0,70$.

Discussion

Ramotha curtisae sp. nov. has a somewhat isolated position in the genus and differs markedly from all congeners except *R. trigona* by its sub-triangular shape in lateral view. It differs from the latter species by the convex anterior edge in dorsal view (beak-like in *R. trigona*). There can, however, be no doubt that these two taxa (*R. trigona* and *R. curtisae*) belong to the same phyletic lineage within the genus, *R. trigona* thus being the most southern representative of this species-group.

Ramotha kenyensis (Lindroth, 1957)

Figs 8I, 12A–F, 14A–D

Eucypris kenyensis Lindroth, 1957: 53–56, figs 1–6. Löffler, 1968: 153–156.

Type locality

Shallow lake in Teleki Valley on Mount Kenya (altitude 4 230 m).

Type material

UPPS (type 601n): 31 Ad ♀ (3 used for SEM, 1 dissected and 2 stored *in toto*—UPPS.601(n.1–3), 1 (A–1) ♀, 16 (A–2) ♀, 5 (A–3) ♀ in spirit in a tube. Lectotype (here designated): ♀, selected from the above syntypes, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (UPPS.601(n.1–2)); all other syntypes become paralectotypes.

Diagnosis

Valves elongated (Figs 12A–B, 14A–B), with posterior margin produced in lateral view, anterior margin very broadly rounded, smoothly passing into the dorsal margin, almost without an ascending part and dorsal margin, thus not showing an anterior blunt angle. In dorsal view (Figs 12C, 14C), anterior edge pointed, greatest



width (c. one-half of length) situated near the middle. Soft parts without special features.

Measurements

Lindroth (1957) (in mm): L = 1,96–2,15 (n = 4); H = 1,10–1,18 (n = 4); W = 1,07 (n = 1). New measurements (in μm , mean \pm S.D., n = 5): L = $2\,038 \pm 59$; H = $1\,162 \pm 46$; W = $1\,183 \pm 38$; W/L = 0,57–0,60.

Discussion

Ramotha kenyensis differs from its geographically closest congeners, *R. montana* and *R. crassa*, in the shape of the anterior margins in lateral view, which are far more broadly rounded than in the two other taxa. In this, *R. kenyensis* agrees well with the South African *R. purcelli*, to which it is indeed closely related. *Ramotha purcelli*, however, has its greatest width in dorsal view situated at about one-third from the front (in the middle in *R. kenyensis*).

Ramotha montana (Lindroth, 1957)

Figs 8H, 12G–M, 14E–G

Eucypris hirta Klie, 1944: 17–18 (*non* Sars, 1924).

Eucypris montana Lindroth, 1957: 56–59, figs 7–13. Löffler, 1968: 153–156.

Type locality

Shallow temporary water on Mount Meru (altitude 2 250 m).

Type material

UPPS (type 228g) 92B: 7 Ad ♀ (two used for SEM of which one dissected—UPPS.228(g.1–3)), 15 (A–1) ♀, 4 (A–2) ♀, 2 (A–4) ♀, and 4 (A–5) ♀ in spirit. Lectotype (here designated): ♀, selected from the above syntypes, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (UPPS.228(g.1–2)); all other syntypes become paralectotypes.

Other material investigated

ZIZM 837: c. 10 ♀ *in toto* in glycerine (with Cps completely decalcified, but with shape recognizable) in a tube, labelled '*Eucypris hirta* G. O. Sars, Belg. Congo: Albert Nat. Park. no. 51, 11 März 1935, coll. H. Damas'.

Fig. 10 (*see opposite*). A–M. *Ramotha curtisae* gen. et sp. nov. A–F. From Namibia. A. ♂, LV, internal view (KBIN OC1493). B. ♂, RV, internal view (KBIN OC1493). C. ♀, LV, internal view (SMN 51514). D. ♀, RV, internal view (SMN 51514). E. ♀, Cp, ventral view (SMN 51516). F. ♀, Cp, dorsal view (SMN 51516). G–M. From Zimbabwe. G. ♂, LV, internal view (KBIN OC1508). H. ♂, RV, internal view (KBIN OC1508). I. ♂, Cp, ventral view (AM/SED.36A). J. ♀, LV, internal view (KBIN OC1509). K. ♀, RV, internal view (KBIN OC1509). L. ♀, Cp, ventral view (AM/SED.36B). M. ♂, Cp, dorsal view (AM/SED.36A). N–Q. *Ramotha trichota* (G. W. Müller). N. ♀, LV, internal view (KBIN OC1505). O. ♀, RV, internal view (KBIN OC1505). P. ♂, LV, internal view (KBIN OC1506). Q. ♂, RV, internal view (KBIN OC1506). Scale: 1 333 μm for A–M; 1 587 μm for N–Q.

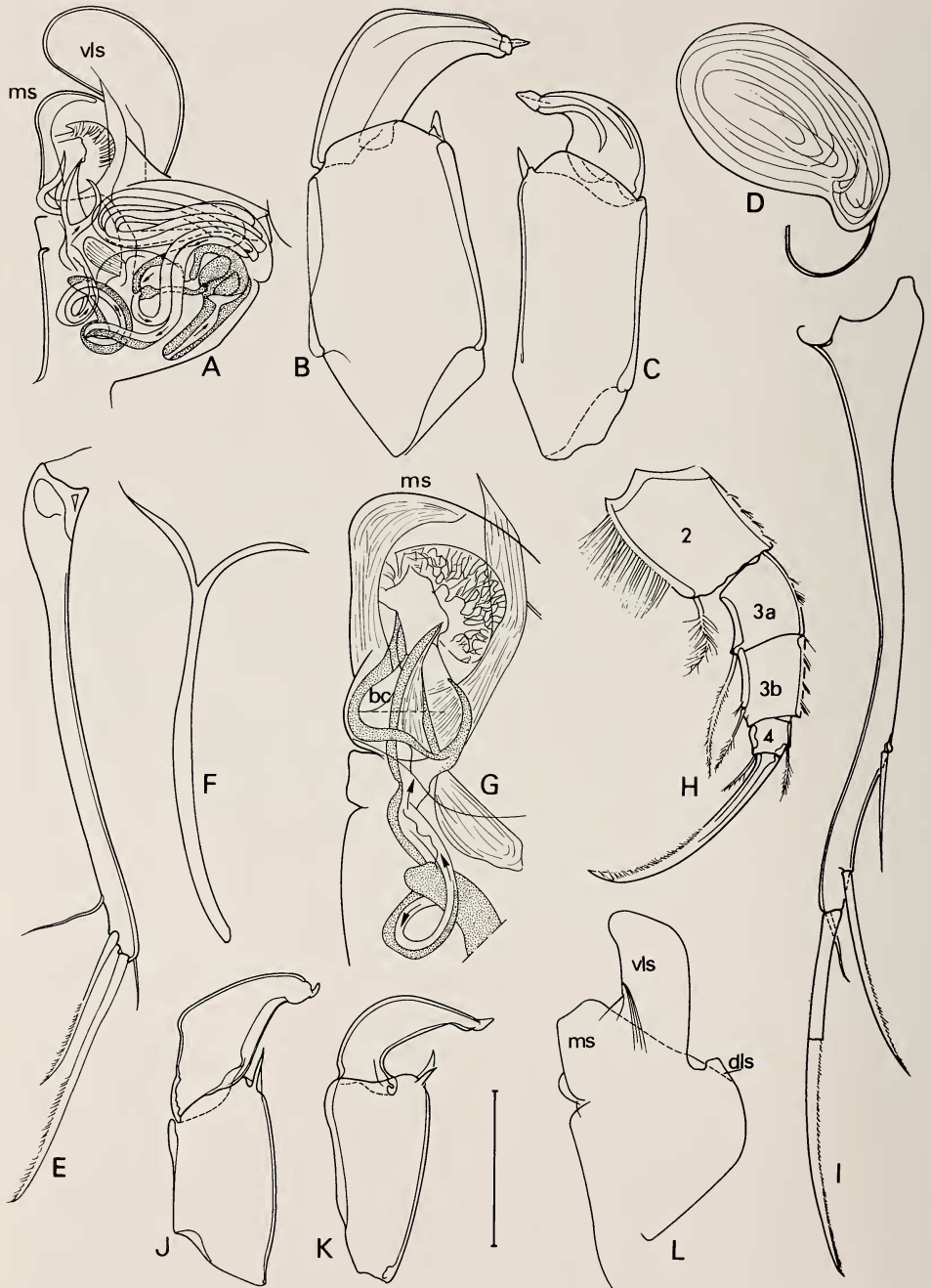


Fig. 11. A-H. *Ramotha curtisae* gen. et sp. nov., Zimbabwe. A. ♂, hemipenis (AM/SED.36C-D). B. ♂, right prehensile palp (AM/SED.36C-D). C. ♂, left prehensile palp (KBIN OC1508). D. ♀, flattened seminal receptacle (KBIN OC1509). E. ♂, furca (AM/SED.36C-D). F. ♂, furcal attachment (AM/SED.36C-D). G. ♂, hemipenis, detail of inner anatomy (AM/SED.36C-D). H. ♂, T1 (AM/SED.36C-D). I-L. *Ramotha trichota* (G. W. Müller), ♂ (KBIN OC1506). I. Furca. J. Right prehensile palp. K. Left prehensile palp. L. Outline of hemipenis. Scale: 323 μ m for L; 156 μ m for A, D, H-K; 81 μ m for B, C, E-G.

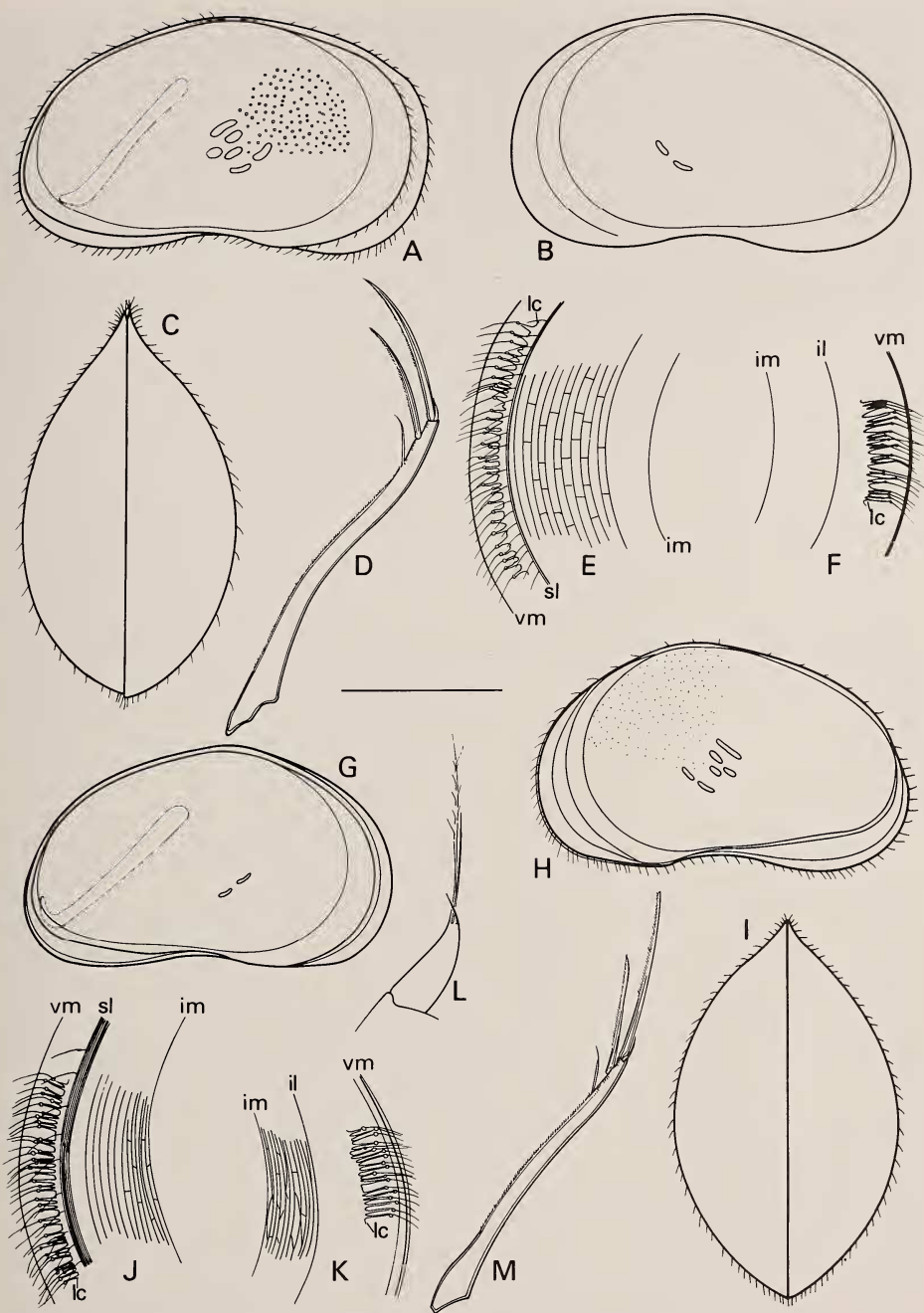
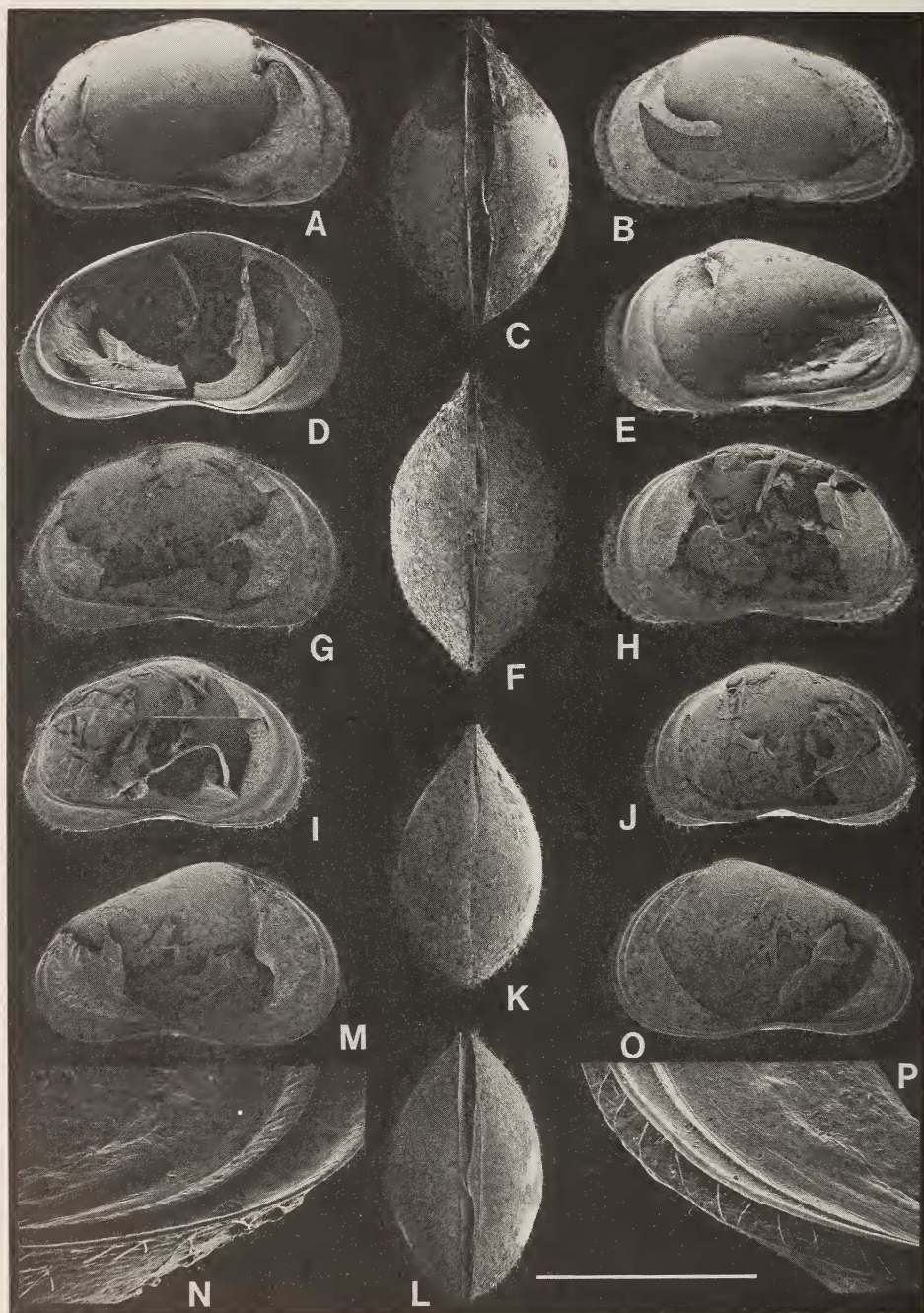


Fig. 12. A–F. *Ramotha kenyensis* (Lindroth), all redrawn after Lindroth (1957). A. RV, external view. B. LV, external view. C. Cp, dorsal view. D. Furca. E. RV, internal view, detail of anterior margin. F. LV, internal view, detail of anterior margin. G–M. *Ramotha montana* (Lindroth), all redrawn after Lindroth (1957). G. RV, external view. H. LV, external view. I. Cp, dorsal view. J. RV, internal view, detail of anterior margin. K. LV, internal view, detail of anterior margin. L. Mx2, detail of palp. M. Furca. Scale: c. 800 μm for A–C, G–I; c. 300 μm for D–F, J–M.



Diagnosis

Valves (Figs 12G–H, 14E–G) higher than in the preceding species, with anterior margin in lateral view less broadly rounded and more pointed, passing into the dorsal margin after a long ascending part with a blunt angle; LV posteriorly evenly rounded. Cp in dorsal view (Figs 12I, 14L) wider than in the preceding species, but with greatest width also situated in the middle; anterior edge pointed, but less so than in *R. producta*, and posterior edge convexly rounded. Soft parts without special features.

Measurements

Lindroth (1957) (in mm, $n = 2$): $L = 1.94\text{--}1.98$; $H = 1.14\text{--}1.16$; $W = 1.13\text{--}1.17$. New measurements (in μm , mean \pm S.D., $n = 5$): $L = 1\,914 \pm 57$; $H = 1\,141 \pm 45$; $W = 1\,148 \pm 55$; $W/L = 0.58\text{--}0.62$.

Discussion

See under the following species.

Ramotha producta (Sars, 1924) comb. nov.

Figs 1A–B, 7K–M, 13, 15E–K, 16A–G

Eucypris producta Sars, 1924: 109–110, pl. 3 (figs 1–2).

Type locality

Vlei near Port Elizabeth (South Africa).

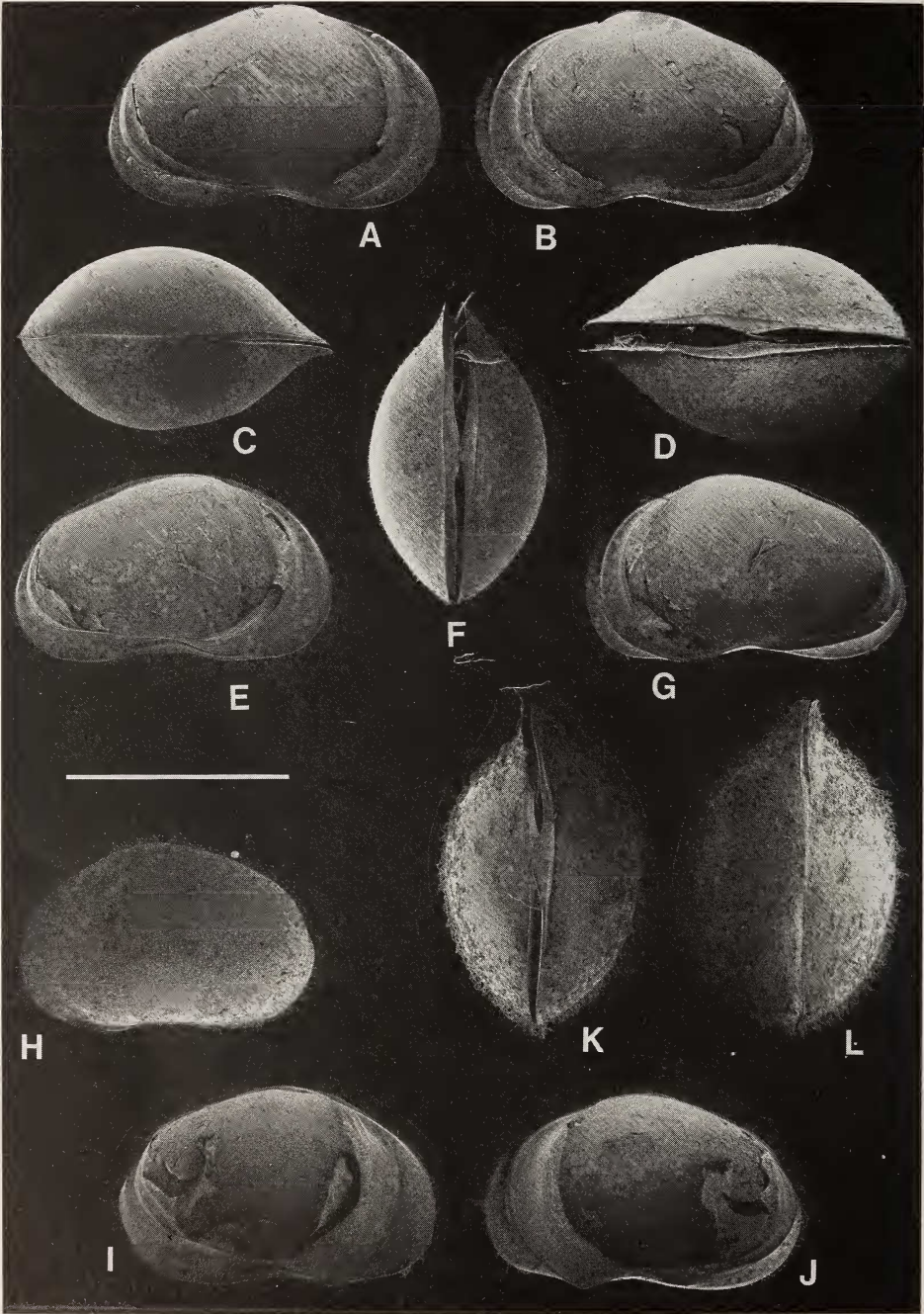
Type material

SAM–A11312: 5 ♀ from the above locality (labelled '*Eucypris propinqua* G. O. Sars'—MS-name) in spirit (2 ♀ used for SEM, nos SAM–A40040–1171, the former dissected). Lectotype (here designated): the dissected ♀ with soft parts dissected in glycerine on a sealed slide and with valves stored dry (SAM–A40040); the other syntypes become paralectotypes.

Other material investigated

A slightly aberrant form of this species was collected from various temporary water bodies in the vicinity of Grahamstown, Eastern Cape Province (KBIN/IG.27549–GR/12–15); in some of these localities, bisexual populations occurred (KBIN/IG.27549–GR/17–19). The specimens from the parthenogenetic populations are slightly more elongated and have carapaces that are narrower and show a

Fig. 13 (see opposite). *Ramotha producta* (Sars). A–B. Lectotype, ♀ (SAM–A40040). A. LV, internal view. B. RV, internal view. C. Paralectotype (SAM–A40041), ♀, Cp, ventral view. D–F. Parthenogenetic ♀ from Grahamstown. D. LV, internal view (KBIN OC1502). E. RV, internal view (KBIN OC1502). F. Cp, ventral view (KM.1173—lost). G–L. Males and females from a bisexual population, Grahamstown. G. ♀, LV, internal view (KBIN OC1497). H. ♀, RV, internal view (KBIN OC1497). I. ♂, LV, internal view (KBIN OC1494). J. ♂, RV, internal view (KBIN OC1494). K. ♂, Cp, dorsal view (KBIN OC1496). L. ♂, Cp, ventral view (KBIN OC1495). M–P. 7th larval instar ♀ from a parthenogenetic population near Grahamstown. M–N. LV (KBIN OC1501). M. Internal view. N. Anterior detail. O–P. RV (KBIN OC1501). O. Internal view. P. Anterior detail. Scale: 1 587 μm for A–L; 781 μm for M, O; 145 μm for P; 133 μm for N.



cavely pointed posterior end. The ♂ and some of the ♀ from the bisexual populations generally have a significantly larger height/length ratio (see measurements). Other females from the same populations have the same shape as the parthenogenetic specimens. Both types of ♀ were found to contain spermatozooids, although less commonly in the more elongated specimens. Intermediate forms, although rare, were present, which is why no taxonomic importance is attached to these morphological differences.

All this material was collected by K. Martens (with H. Barber and F. C. de Moor) in November 1989.

Diagnosis

♀ (*parthenogenetic populations*). Valves (Fig. 13A–B, D–E) elongated and caudally produced, anterior margin in lateral view not broadly rounded, and passing into the dorsal margin after a relatively long ascending part, with a blunt angle; the latter angle situated considerably more towards the front than in the preceding species. LV posteriorly not evenly rounded, showing a weak and blunt angle. Cp (Fig. 13C, F) wide in dorsal view, but with greatest width situated slightly anterior to the middle; anterior edge pointed, more so than in the preceding species; lateral sides mostly running straight and parallel to each other over about one-third of the total length.

♀ (*bisexual populations*). As in the former, but with valves considerably higher (Fig. 13G, H); in dorsal view, most carapaces with evenly rounded lateral sides.

♂ (*first description*). Valves (Fig. 13I, J) considerably shorter and higher than those of the parthenogenetic ♀. Cp in dorsal view (Fig. 13K, L) with rounded lateral sides. Hemipenis with lateral shield broadly rounded, medial shield asymmetrically produced towards the ventral side, bluntly pointed (Fig. 16A, D). Left prehensile palp (Fig. 16B, E) with distal segment tapering, evenly rounded, proximal segment with two medium-sized subapical sensory organs. Right prehensile palps (Fig. 16C, F) with distal segment sub-triangular, with three nearly straight margins; proximal segment with 2 larger sensory organs. A2 with normal sexual dimorphism in the apical chaetotaxy. T1 with distal claw somewhat longer than in the ♀ (Fig. 14E). Furca with ramus straight. Other soft parts as in the ♀.

Measurements

See Table 1.

Discussion

Ramotha montana and *R. producta* are closely related and could indeed constitute geographically isolated subspecies of the same species. The differences cited in the above diagnosis of *R. producta*, however, seem sufficient to maintain the specific

Fig. 14 (*see opposite*). A–D. *Ramotha kenyensis* (Lindroth). A–B. Lectotype, ♀ (UPPS.601(n.1–2)). A. LV, internal view. B. RV, internal view. C–D. Paralectotype, ♀ (UPPS.601(n.3)). C. Cp, dorsal view. D. Cp, ventral view. E–G. *Ramotha montana* (Lindroth). E. Lectotype, ♀, LV, internal view (UPPS.228(g.1–2)). F. Paralectotype, ♀, Cp, ventral view (UPPS.228(g.3)). G. Lectotype, ♀, RV, internal view (UPPS.228(g.1–2)). H–L. *Ramotha hirta* (Sars). H. Paralectotype, ♀, LV, external view (SAM–A40044). I–J. Lectotype, ♀ (SAM–A40043). I. RV, internal view. J. LV, internal view. K. Cp, ventral view (KM.1229). L. Cp, dorsal view (KM.1228). Scale: 1 389 µm for A–G; 1 111 µm for H–L.

TABLE 1
Measurements of different populations of *Ramotha producta* (in μm , mean \pm S.D.).

Population	L	H	W	H/L	W/L
GR/12 (n = 5)					
parthenogenetic ♀	2161 \pm 38	1162 \pm 38	1193 \pm 41	0,52–0,55	0,54–0,57
GR/17 (n = 5)					
parthenogenetic? ♀	2321 \pm 46	1241 \pm 44	1255 \pm 31	0,52–0,55	0,53–0,57
bisexual ♀	2155 \pm 37	1231 \pm 34	1179 \pm 23	0,56–0,59	0,54–0,57
♂	1954 \pm 54	1161 \pm 27	1092 \pm 36	0,58–0,61	0,54–0,59
Lectotype RV	2241	1276	—	0,57	—
Lectotype LV	2276	1310	—	0,58	—

status of both taxa. Future finds of intermediate populations will reveal whether this decision can be corroborated.

Ontogeny

As larval morphology can be most illuminating when attempting to reveal phylogenetic relationships, aspects of the morphology of the larval stages that were available are presented.

8th larval stage of ♀. RV (Fig. 7M) with approximately the same shape as in the adult, but with anatomy of the valve margin substantially different: both anteriorly and posteriorly with selvage inwardly displaced over a short distance only and with a long and conspicuous inner list (absent in adults).

LV (Fig. 7K) on both sides with an inner list only (as in the adults), but situated closer to the valve margin than in the adult stage. Shape of Cp in dorsal view (Fig. 7C) as in the adult.

A1 with 2+5 segments, all segments relatively shorter and wider than in the adult; Rome organ relatively larger; distal segment with Ya long and narrow and with one of the setae shorter, approximately two-thirds of the length of Ya.

A2 with five long natatory setae; z₁ with base about twice as wide as in z₂ and z₃, i.e. rather claw-like; G₂ short and incompletely developed; terminal segment with y₃ bifurcated; penultimate segment with three lateral 't'-setae.

Md palp with seta alpha narrower, beta subequal to the one in the adult and gamma-seta flanked by two instead of three setae.

Mx1 palp with terminal segment c. 2,5 times as long as basal width, third endite with two smooth claws.

Mx2 with two subequal 'a'-setae, one 'b'- and one 'd'-seta; respiratory plate carrying four long and one short ray; palp with three apical setae.

T1 (Fig. 15F) with penultimate segment divided; claw relatively short, but with two rows of teeth; seta d₂ = c. 1,5 times the length of seta d₁.

Basal segment of T2 with three setae; apically with fourth segment somewhat more separated from third segment than in the adult, but still forming a cleaning pincer.

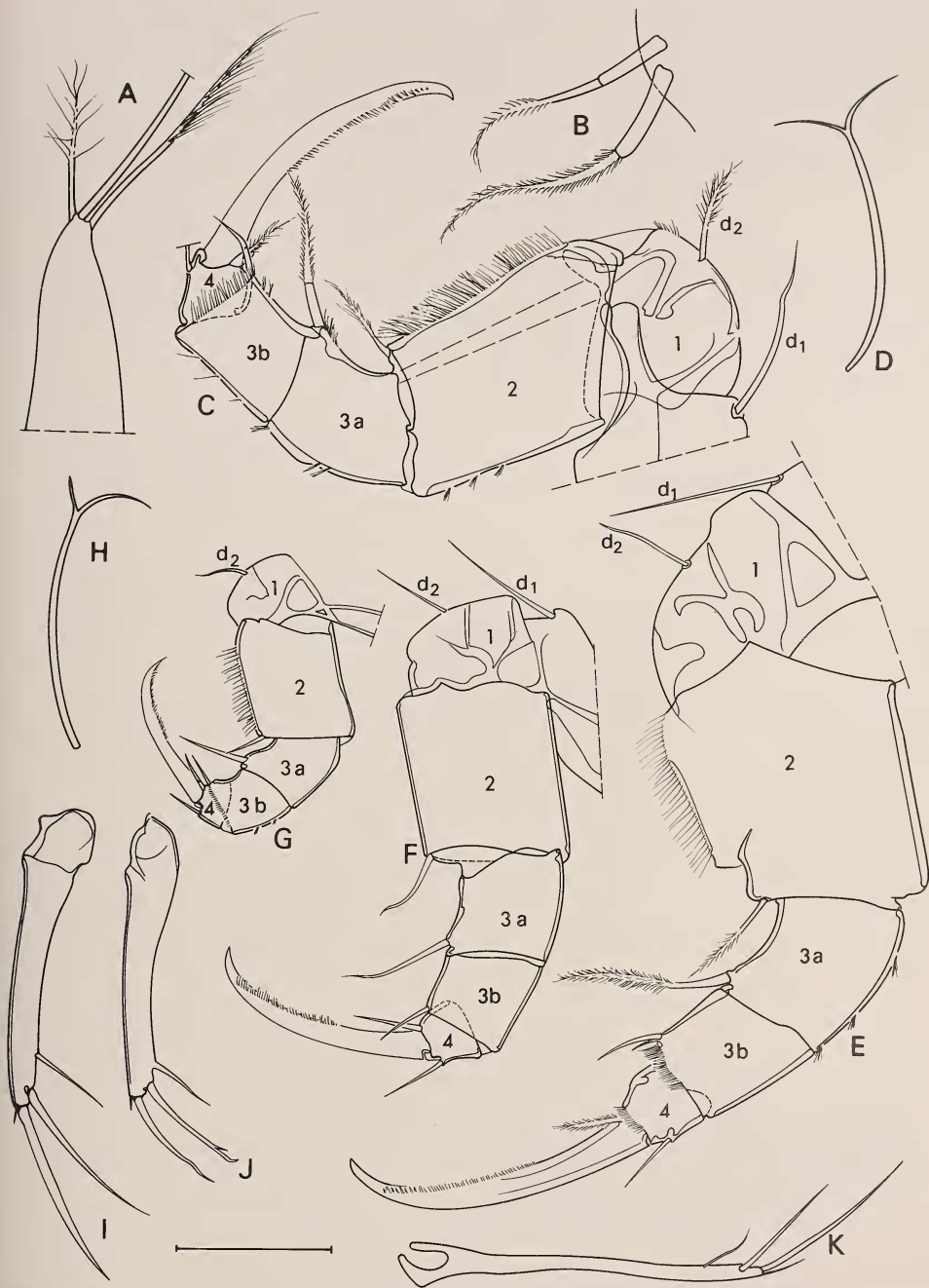


Fig. 15. A-D. *Ramotha purcelli* (Sars), ♀ (SAM-A40046). A. Mx2, detail of palp. B. Mx2, detail of 'a'-setae. C. T1. D. Furcal attachment. E-K. *Ramotha producta* (Sars). E. ♀ (Ad), T1 (KBIN OC1502). F. ♀ (8th larval instar), T1 (KBIN OC1499). G. ♀ (7th larval instar), T1 (KBIN OC1501). H. ♀ (7th larval instar), furcal attachment (KBIN OC1501). I. ♀ (7th larval instar), furca (KBIN OC1501). J. ♀ (7th larval instar), other furca of same specimen (KBIN OC1501). K. ♀ (Ad), furca (KBIN OC1502). Scale: 323 μ m for D, K; 156 μ m for A, C, E-J; 33 μ m for B.

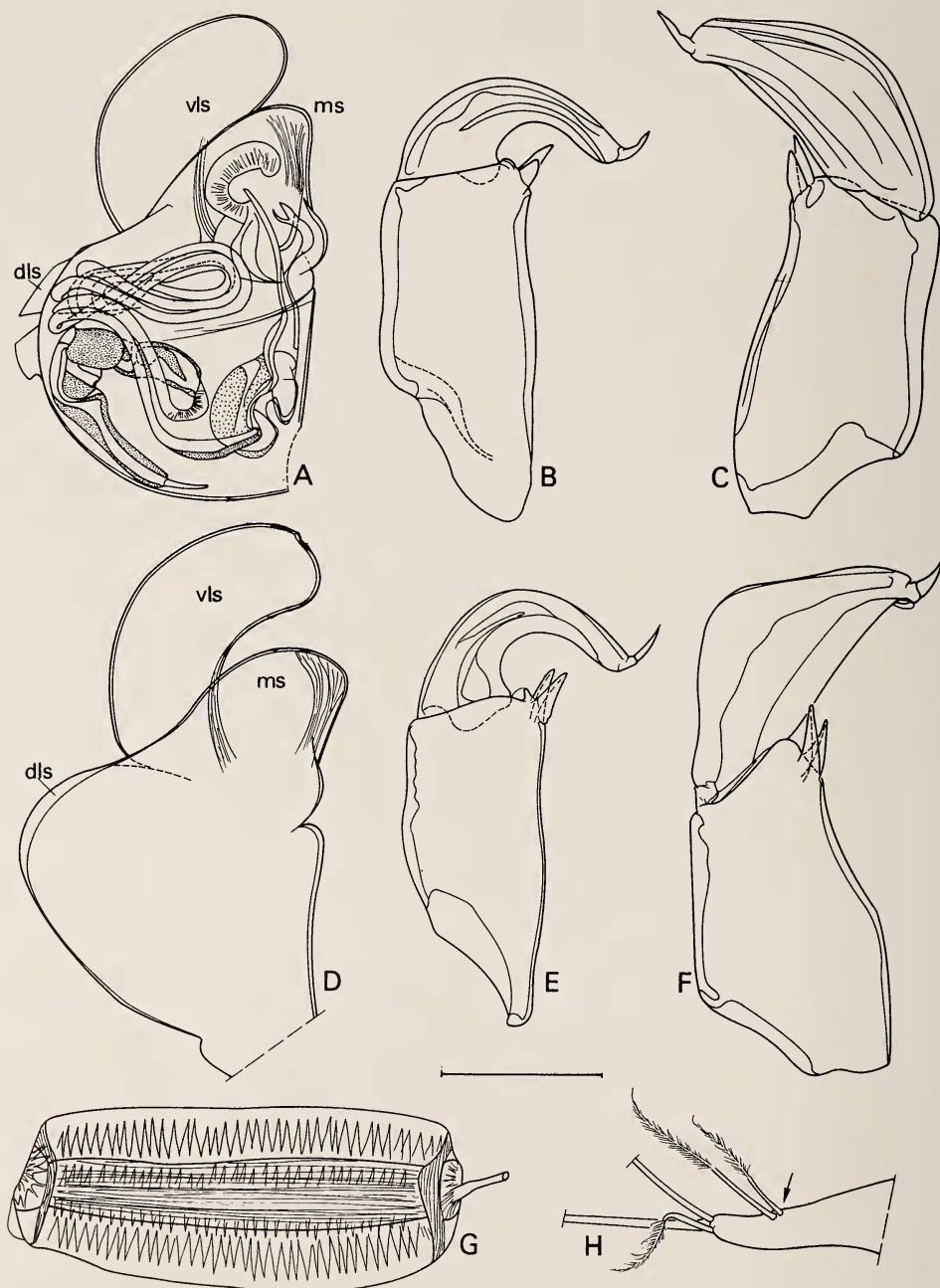


Fig. 16. A-G. *Ramotha producta* (Sars), ♂. A. Hemipenis (AM/LEN.17A). B. Left prehensile palp (AM/LEN.17A). C. Right prehensile palp, insufficiently flattened (AM/LEN.17A). D. Hemipenis outline (KBIN OC1494). E. Left prehensile palp (KBIN OC1494). F. Right prehensile palp (KBIN OC1494). G. Zenker's organ (KBIN OC1494). H. *Ramotha hirta* (Sars), ♀ (SAM-A40043). Mx2 palp. Scale: 156 μ m for A, D, G, H; 81 μ m for B, C, E, F.

Furca with rami shorter and wider, (sub-)apically still with two claws and setae. Furcal attachment bifurcated. Rake-like organs as in the adult.

7th larval stage of ♀. Shape of both valves more elongated, with greatest height situated more towards the front; ventral sinuous indentation more caudally situated and caudal margin more pointed than in the previous larval instar (Fig. 13M, O). Marginal anatomy similar to the 8th larval stage, but with selvage in RV and inner list in LV situated even closer to the valve margins (Fig. 13N, P).

A1 with Rome organ still visible.

A2 with four long natatory setae; apical segment with claws GM and Gm, seta 'g' and aesthetasc y_3 penultimate segment with two subapical z-setae, claw G_2 short and only two lateral 't'-setae.

Md palp normal alpha-seta, beta-setae somewhat wider and gamma-setae more smooth.

Mx1 with second palp segment approximately three times as long as the basal width, two claws on third endite smooth.

Mx2 with only one 'a'-seta and one 'b'- and 'd'-seta; respiratory plate with three long and one short ray; palp apically with one long, one medium-sized and one minute seta.

T1 with setae d_1 and d_2 subequal, penultimate segment divided and apical claw set with two rows of teeth (Fig. 15G).

T2 as in the former larval stage, but with all segments relatively wider and shorter.

Furca with ramus short (sometimes both rami significantly different—see Fig. 15I, J). Furcal attachment (Fig. 15H) bifurcated.

Ramotha purcelli (Sars, 1924)

Figs 1M–N, 5I–O, 15A–D

Eucypris purcelli Sars, 1924: 108–109, pl. 2 (figs 12–15).

Type locality

Pond at Ashton, Robertson Division (South Africa).

Type material

SAM–A11287: syntypes, c. 100 good ♀ and larvae, collected from the above locality (SAM–A40047–A40049 used for illustrations and stored separately).

Lectotype (here designated): ♀, selected from the above syntypes, with soft parts dissected in glycerine on a sealed slide and with valves stored dry (SAM–A40046); all other syntypes become paralectotypes.

Diagnosis

Both valves elongate in lateral view (Fig. 5I, J), with frontal margin broadly rounded, passing into the dorsal margin almost without an angle, the latter margin passing into the caudal margin with a blunt angle; caudal margin not evenly rounded but showing an additional blunt angle; ventral margin weakly sinuous. Greatest height situated slightly in front of the middle. Ventral outer list on LV weak (Fig. 5L); dorsal outer list on this valve prominent (Fig. 5M). Cp in dorsal view with RV anteriorly

clearly reaching beyond LV, and with greatest width situated at about one-third from the front (Fig. 5K). Soft parts without special features.

Measurements (in μm ; mean \pm S.D., $n = 5$)

$L = 2\,089 \pm 129$; $H = 1\,172 \pm 53$; $W = 1\,169 \pm 56$; $W/L = 0,55-0,58$.

Discussion

The differences between *R. purcelli* and *R. producta* are similar to those between *R. kenyensis* and *R. montana*. *Ramotha purcelli* is thus similar to *R. kenyensis*, but is sufficiently different in its morphology to merit separate specific status (see discussion under *R. kenyensis*).

Ramotha trichota (G. W. Müller, 1908)

Figs 1I-J, 10N-Q, 11I-L

Cypris trichota G. W. Müller, 1908: 152-153, figs 1-5.

Eucypris trichota Sars, 1924: 108, pl. 2 (figs 1-11).

Type locality

Zeekoevlei, Plumstead, near Simonstown (South Africa).

Material investigated

GW no. 25133(7g): 1 ♀ ('Südafrika—Südpolar Exp.'). (Note: this is probably one of the specimens used by G. W. Müller for the original description of the species. However, this author mentioned that he had 9 ♀ from Zeekoevlei. As we do not know the whereabouts of the other specimens, a lectotype will not be designated here. The specimen was left undissected.)

SAM-A11926: c. 20 ♀ (with soft parts in bad condition) from Valkenbergvlei, collected on 15 July 1922 by E. M. Stephensen (?det. D. H. Eccles).

SAM-A11286: 5 ♀ and numerous valves from 'SAM EE' (?) (identified as *Eucypris producta* by G. O. Sars, as *R. trichota* by K. Martens).

KBIN OC1507 (G501/18): 1 ♀ from Wiesdrif, Western Cape Province (approx. co-ordinates: 34°40'12"S 19°54'47"E), collected by Dr J. King (UCT, Cape Town) on 11 May 1989 (det. K. Martens).

KBIN OC1505-1506 (G501/19): 1 ♀ and 1 ♂ from Soetendalsvlei Ditch, Western Cape Province (34°44'42"S 19°58'33"E), collected by Dr J. King (UCT, Cape Town) on 11 May 1989 (det. K. Martens).

Diagnosis (♀)

By far the largest of all *Ramotha* species, with high valves (Fig. 10N, O), greatest height situated at about one-third from the front, with dorsal margin sloping towards the caudal side and passing into the caudal margin without an angle; anterior margin in lateral view more broadly rounded than posterior one. Cp in dorsal view with anterior edge beak-like (concavely produced) and posterior edge rounded; greatest width situated slightly anterior to the middle. Soft parts without special features.

First description of ♂

Valves (Fig. 10P, Q) shorter and considerably higher than in the ♀, in lateral view with a sub-triangular appearance; anatomy of the valve margin identical to that of ♀. Both prehensile palps with surprisingly small penultimate segment, in right palp only slightly longer than the terminal segment (Fig. 11J). The latter in the right palp furthermore with a wide base and an irregular outline. Terminal segment of left palp (Fig. 11K) sickle-shaped and rather more elongated than in the other species of *Ramotha*. Hemipenis (Fig. 11L) with an elongated lateral shield, with straight and parallel lateral margins and a nearly straight distal margin.

Remark

The inner part of the hemipenis was not yet fully developed and sclerotized in the only ♂ specimen available for examination.

Measurements (in µm)

Type specimen (GW.25133/7g): L = 2 862; H = 1 724; W = 1 551; W/L = 0,54. Soetendalsvlei Ditch, ♀ (KBIN OC1505): RV: L = 2 724; H = 1 758. LV: L = 2 655; H = 1 758. ♂ (KBIN OC1506): RV: L = 2 224; H = 1 483. LV: L = 2 155; H = 1 534.

Relationships

This species can at once be distinguished from all congeners by the superior size of the ♀: almost 1 mm longer than the second largest species, *R. producta*.

Remarks

The MRAC (Tervuren) holds two slides (RG.38570) identified as *Eucypris trichota* by R. Kiss, the specimen originating from Bogarama in East Africa (coll. Marlier 1949). This specimen, however, is in such a bad condition that it became completely unidentifiable and this record is therefore disregarded here.

Ramotha trigona (Sars, 1895)

Fig. 1G–H

Cypris trigona Sars, 1895: 32–34, pl. 5 (fig. 3a–c).

Eucypris trigona Sars, 1924: 111–112, pl. 3 (figs 7–8).

Type locality

Swamp near Knysna, east of the Cape of Good Hope (South Africa).

Type material

OSLO F4339: 7 decalcified ♀ and several empty, decalcified valves. As permission was not obtained to dissect specimens, a lectotype has not been designated here.

Diagnosis

Valves in lateral view sub-triangular (Fig. 1G–H), with greatest height situated towards the front; both anterior and posterior margins bluntly pointed in lateral view, but the latter more so; ventral margin nearly straight. Cp in dorsal view with greatest

width situated at or slightly posterior to the middle; anterior edge with concave beak-like extension. Both valves anteriorly with a wide fused zone, posteriorly with fused zone and flange wide.

Morphology of soft parts unknown.

Measurements

According to Sars (1924), the ♀ of this species is 1,75 mm long. New measurements (in μm , mean \pm S.D., $n = 3$): $L = 1\,649 \pm 105$; $H = 948 \pm 69$; $W = 862 \pm 17$; $W/L = 0,50-0,53$.

KEY TO THE SPECIES

- 1A. Length of ♀ more than 2,5 mm (W. Cape)..... *R. trichota*
- 1B. Length of ♀ less than 2,5 mm 2
- 2A. Ventral margin (including selvage in RV and inner list in LV) conspicuously produced in the first third (Fig. 5C, D), especially in the ♀; carapace very hairy (W. Cape)..... *R. hirta*
- 2B. Carapace less hairy, ventral margin not conspicuously produced in the first third 3
- 3A. W/L ratio $>2/3$, in dorsal view anterior conspicuously beak-like 4
- 3B. W/L ratio $<1/2$, in dorsal view anterior less produced 5
- 4A. Valves in lateral view with a nearly evenly rounded dorsal margin, a nearly straight ventral margin and with anterior and posterior margins nearly evenly rounded (W. Cape)..... *R. corpulenta*
- 4B. Valves in lateral view more elongated, with curved ventral margin and with anterior margin more broadly rounded than posterior one (W. Cape)..... *R. capensis*
- 5A. Valves sub-triangular 6
- 5B. Valves elongated, not sub-triangular 7
- 6A. Carapace in dorsal view with concavely produced beak (W. Cape) . . . *R. trigona*
- 6B. Carapace in dorsal view anteriorly and posteriorly convexly rounded (Namibia and Zimbabwe) *R. curtisae*
- 7A. $L = c. 1,75$ mm (East Africa) *R. crassa*
- 7B. $L = c. 2$ mm (East and South Africa) 8
- 8A. Anterior margins of isolated valves broadly rounded, passing into the dorsal margin almost without an angle 9
- 8B. Anterior margin of isolated valves less broadly rounded, more pointed, and with a conspicuous angle between anterior and dorsal margin 10
- 9A. Carapace in dorsal view with greatest width situated almost at mid-length (East Africa)..... *R. kenyensis*
- 9B. Carapace in dorsal view with greatest width situated at about one-third from the front (South Africa) *R. purcelli*
- 10A. Carapace in dorsal view with posterior margin convexly rounded (East Africa) *R. montana*

- 10B. Carapace in dorsal view with posterior margin concavely pointed (South Africa)
 *R. producta*

Note. To distinguish between the latter four species, check all figures carefully, especially when dealing with material from localities between East and southern African regions.

DISCUSSION

TAXONOMY AND ZOOGEOGRAPHY

Ramotha gen. nov. belongs to the tribe Cypridini in the Cypridinae, because of the presence of the '8'-shaped loops of the inner spermiductus in the hemipenis. Its affinities with the Eucypridini are thus limited. For a further discussion on the validity of these higher taxa and their mutual affinities, see the first part of this revision (Martens 1990). Within *Ramotha* gen. nov., we can distinguish different phyletic lineages:

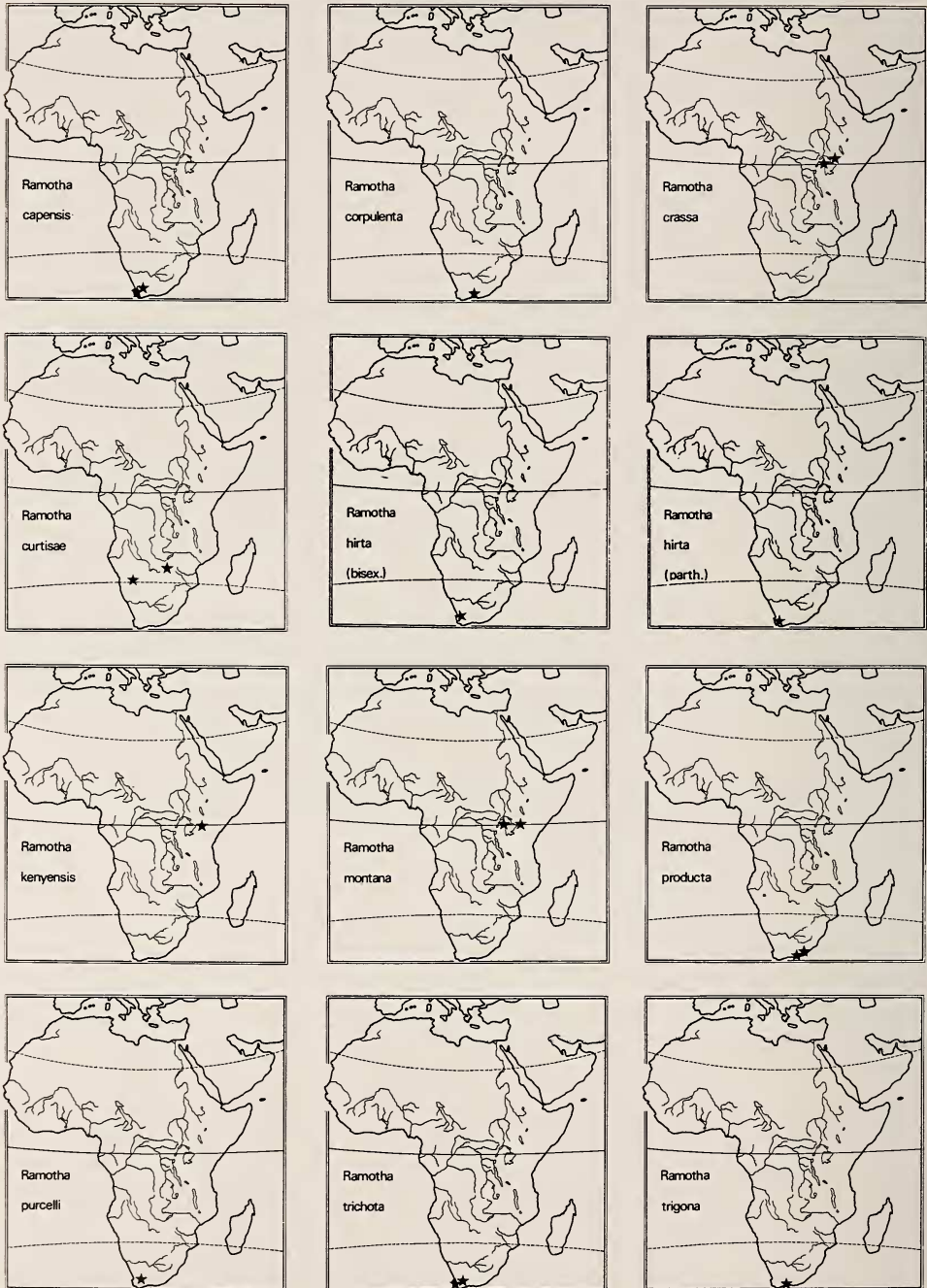
Ramotha trichota is quite distinct within the genus and constitutes a separate lineage. *Ramotha capensis*, *R. corpulenta* and *R. hirta* constitute another lineage, characterized by a wide carapace with a pointed, beak-like frontal edge. This group forms part of the Cape fauna.

Ramotha trigona and *R. curtisae* sp. nov. form another group within the genus; both taxa have sub-triangular valves. They occur in most of southern Africa.

The final lineage is formed by the remaining five species: the small *R. crassa*, the larger *R. kenyensis* and *R. montana* (all from East Africa), and the South African species *R. purcelli* and *R. producta*. We expect this group to have representatives also in the intermediate territories, e.g. in Zambia, Mozambique, etc.

Nevertheless, the genus forms one closely related group, quite distinct from the other Cypridini, as is shown by the very uniform shape of the hemipenis. The genus is furthermore well characterized by a T1 with a divided penultimate segment (fused in *Cypris* and *Pseudocypris*) and by the anatomy of the valve margins. The latter feature deserves some further elaboration. The closing mechanism of the anterior part of the valves in *Ramotha* is formed by a large, inwardly displaced selvage in the RV, which locks into a conspicuous inner list in the LV. In *Cypris*, the closing mechanism is formed by two inwardly displaced selvages, one on each valve. Such a system also exists in, for example, *Chlamydotheca* and in nearly all Megalocypridinae. On the other hand, a similar system to that in *Ramotha* was described for *Trajancypris* (Martens, 1989), a genus belonging to the Eucypridini. In spite of this, *Cypris* and *Ramotha* are much more closely related to each other than to the groups cited above. It is thus concluded that supra-generic affinities should not be based on such functionally relevant aspects of valve anatomy but rather on non-functional relicts of the morphology, e.g. the presence or absence of a 'c'-seta on the Mx2.

Another, superficially similar genus is the Australian *Alboa* De Deckker, 1981. Thanks to the kindness of Dr De Deckker, I was able to re-investigate a number of paratypes. It appeared that *Alboa* does not belong in the Cypridini, as it lacks '8'-shaped loops of the inner spermiductus in the hemipenis, apart from other features that are different. Its original allocation to the Cyprinotinae still seems the most plausible to date.

Fig. 17. Distribution of African species of *Ramotha* gen. nov.